PLACENTAL CORD BLOOD DRAINAGE AFTER VAGINAL DELIVERY AS PART OF THE MANAGEMENT OF THIRD STAGE OF LABOUR

This dissertation is submitted to

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In partial fulfilment of the requirement of the award for the degree of

M. S. (OBSTETRICS AND GYNAECOLOGY)

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CERTIFICATE

This is to certify that the dissertation entitled **PLACENTAL CORD BLOOD DRAINAGE AFTER VAGINAL DELIVERY AS PART OF THE MANAGEMENT OF THIRD STAGE OF LABOUR** is a bonafide work done by **Dr.S.A.Meena**, at R.S.R.M Lying in Hospital, Stanley Medical College, Chennai. This dissertation is submitted to Tamilnadu Dr.M.G.R. Medical University in partial fulfilment of university rules and regulations for the award of M.S. Degree in Obstetrics and Gynaecology.

Prof. Dr. V. Kalaivani M.D., D.G.O.,
Professor & Head of the Department,
Department of Obstetrics & Gynaecology,
Govt. R.S.R.M. Lying-in Hospital,
Stanley Medical College,
Chennai - 600 013.

Prof.Dr. P.Vasanthamani M.D.D.G.O.,
Professor & Chief of the Department,
Department of Obstetrics & Gynaecology,
Govt. R.S.R.M. Lying-in Hospital,
Stanley Medical College,
Chennai - 600 013.

Prof. Dr. S. GEETHA LAKSHMI, M.D., Ph.D
DEAN
Stanley Medical College & Hospital,
Chennai – 600 001.

DECLARATION

I Dr. S.A.Meena, solemnly declare that the dissertation titled, **PLACENTAL CORD BLOOD DRAINAGE AFTER VAGINAL DELIVERY AS PART OF THE MANAGEMENT OF THIRD STAGE OF LABOUR** is a bonafide work done by me at R.S.R.M. Lying in Hospital, Stanley Medical College, Chennai during January 2013- December 2013 under the guidance and supervision of **PROF.DR.P.VASANTHAMANI M.D., D.G.O**., Professor and Chief of the department of Obstetrics and Gynaecology. This dissertation is submitted to the Tamil Nadu Dr. M.G.R. Medical University, in partial fulfilment of University rules and regulations for the award of M.S. Degree in Obstetrics and Gynaecology.

Place: Chennai **Dr. S.A.MEENA**

Date:20.12.2013

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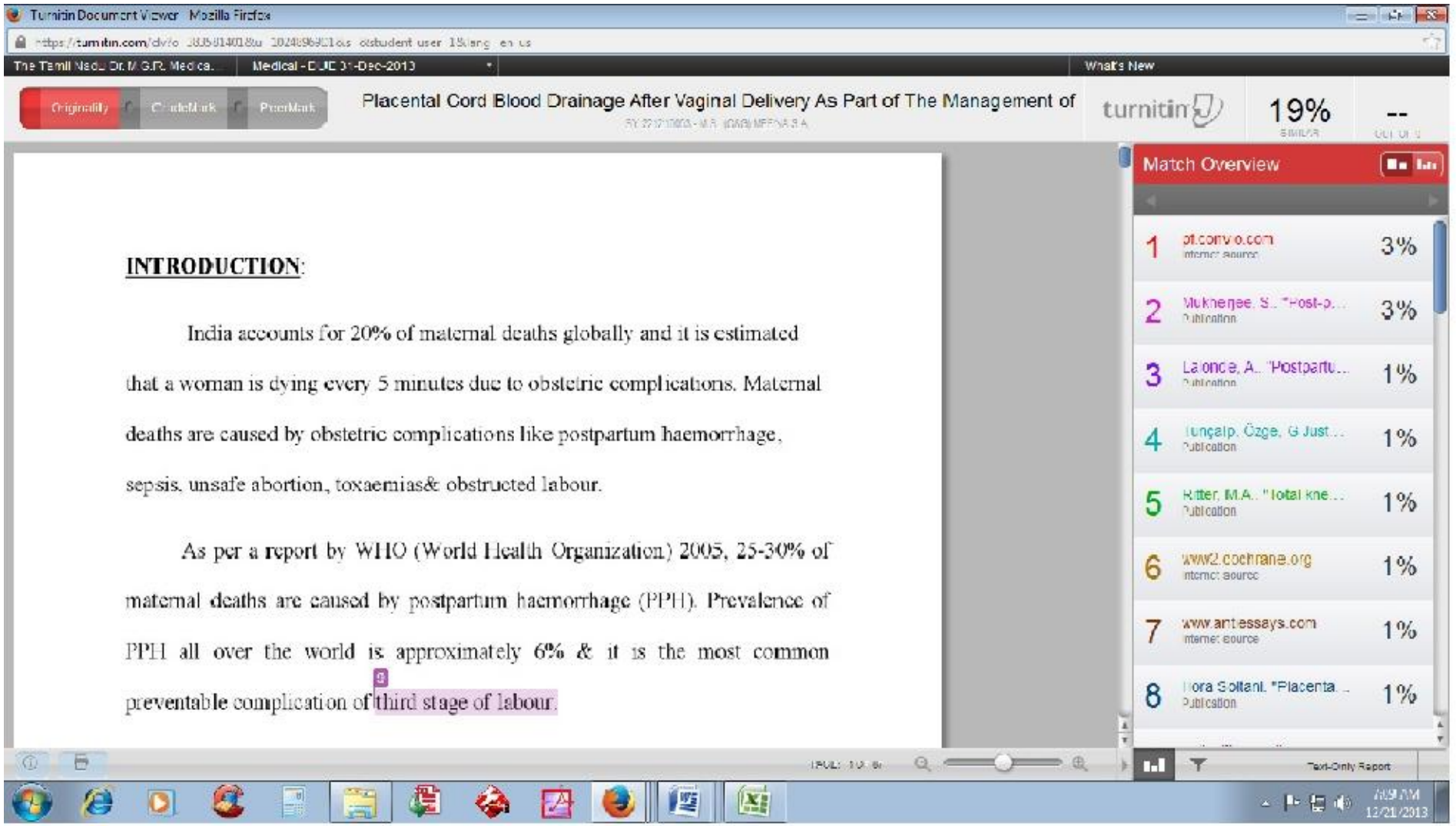
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INTRODUCTION:
India accounts for 20% of maternal deaths globally and it is estimated that a woman is dying every 5 minutes due to obstetric complications. Maternal deaths are caused by obstetric complications like postpartum haemorrhage, sepsis, unsafe abortion, toxaemias& obstructed labour.
As per a report by WHO (World Health Organization) 2005, 25-30% of maternal deaths are caused by postpartum haemorrhage (PPH). Prevalence of PPH all over the world is approximately 6% & it is the most common preventable complication of third stage of labour.

CONTENTS

INTRODUCTION

India accounts for 20% of maternal deaths globally and it is estimated that a woman is dying every 5 minutes due to obstetric complications[8]. Maternal deaths are caused by obstetric complications like postpartum haemorrhage, sepsis, unsafe abortion, toxaemias& obstructed labour.

As per a report by WHO (World Health Organization) 2005, 25-30% of maternal deaths are caused by postpartum haemorrhage (PPH)[8]. Prevalence of PPH all over the world is approximately 6%[4] & it is the most common preventable complication of third stage of labour[6].

Third stage of labour begins immediately after delivery of foetus (or) foetuses and it involves separation and expulsion of placenta with its entire membranes[7]. Although the third stage of labour occupies a very short duration, it is the most crucial period, as complications during this stage may be hazardous to maternal life.

Postpartum haemorrhage may be due to various causes like bleeding from implantation site due to atonic uterus, trauma (or) both.

Traditionally Postpartum haemorrhage was defined as loss of 500 ml of blood or more after a vaginal birth or ≥ 1000 ml following

caesarean birth or a fall of 10% hematocrit when compared to pre labour value[7]. But 50% of pregnant women who delivered vaginally shed 500 ml of blood (or) more when measured quantitatively.

Pitchard and associates reported that estimated blood loss is only approximately half of actual loss. So any blood loss more than 500 ml needs careful attention[7]. Although many factors predispose to atonic postpartum haemorrhage, like multiparity, over distension of uterus, antepartum haemorrhage & prolonged labour, two thirds of postpartum haemorrhage occurs in women with no risk factors[23]. Hence all pregnant women are at risk of postpartum haemorrhage.

Management of third stage of labour involves a careful look for signs of placental haemorrhage soon after delivery of foetus/foetuses[8].

Usually signs of placental separation occur within five minutes after delivery of baby. After placenta gets separated, state of uterus is examined to find out whether it is firmly contracted or not. After expulsion of placenta, it is examined thoroughly to find whether entire placenta has got separated. Condition of the mother and the amount of bleeding are noted carefully. This approach has been termed as physiological management of third stage of labour[7].

It has been proved that active management of third stage of labour prevents atonic haemorrhage. Usage of oxytocics reduces haemorrhage by 40%[20]. Active management of third stage of labour (AMTSL) includes use of uterotonic as soon as the baby is delivered (with in 1 minute), controlled cord traction and uterine massage. AMTSL shortens the duration of third stage of labour and by facilitating delivery of placenta it reduces the blood loss[14].

Normal duration of third stage varies from 5-15 minutes and it is shown in literature that, the best predictor of PPH,is a 3rd stage of labour which lasts for more than 18 minutes[20].

Normally after separation and expulsion of placenta, there will not be any severe bleeding. This is due to immediate closure of the mouth of severed maternal vessels by contraction and retraction of muscle fibres of the middle layer of uterine musculature, which act as living ligatures.

Placental cord blood drainage includes unclamping the previously cut and clamped umbilical cord. The present study was undertaken to evaluate the efficacy of placental cord blood drainage after vaginal delivery as a part of management of the third stage of labour in reducing the duration & blood loss during third stage of labour thereby preventing postpartum haemorrhage.

AIM AND OBJECTIVES

AIM:

The present study is conducted to evaluate the efficacy of placental cord blood drainage after vaginal delivery

1.In reducing the duration & blood loss during third stage of labour

2.In reducing the incidence of PPH.

OBJECTIVES :

Postpartum haemorrhage is the most common cause of maternal mortality and it complicates about 4% of vaginal and 6% of caesarean deliveries[9].

It can be defined clinically as any amount of blood loss that results in hemodynamic instability.

Postpartum haemorrhage can turn the normal successful labour into abnormal, within a minute.

The best management of third stage of labour is the one that effectively reduces the blood loss and postpartum haemorrhage, while not interfering much with the physiological mechanisms of the third stage[11].

Placental cord blood drainage after labour natural is a very simple and non invasive method and does not need any costly equipment. So the present study was undertaken to evaluate the efficacy of the above method in reducing the blood loss during the third stage as a part of management of the third stage.

REVIEW OF LITERATURE

As per recent data (2009), Maternal Mortality Rate of India is 212 & of Tamil Nadu is 79[56].

In developing countries, postpartum haemorrhage accounts for more than 30% of all maternal deaths[23].

Prolonged third stage of labour is associated with increased incidence of haemorrhage.

The duration of third stage blood loss, incidence of postpartum haemorrhage was reduced in placental blood drainage group. (Gulati et al al - Journal of O&G of India 2001:51)[17]

Sharmal et al (Archives of Gynaecology & Obstetrics – 2005) reported that duration of third stage of labour is significantly reduced in both primi and multigravida following cord blood drainage[18].

A randomized controlled trial of placental blood drainage after spontaneous vaginal delivery(Indian Journal of Obstetrics and Gynaecology- volume 57- no: 3 May/June 2007 conducted by Shravage JC, Silpa P, at J.N.Medical College, Belguam)[15] showed that the duration,

blood loss and incidence of postpartum haemorrhage was reduced in the study group.

In the placental cord drainage group, there is statistically significant reduction in the duration of third stage of labour. Further research is needed in a large scale randomized study to draw major conclusions about the maternal outcomes like blood loss, incidence of postpartum haemorrhage. (Cochrane Review 2009- Soltani H, Dickinson F, Symonds IM)[57]

Placental cord drainage shortens the third stage of labour- (Jongkolsiri.P, Manotaya.S 2009, and Journal of Medical Association – Thai)[13]

Placental cord blood drainage is a simple, safe, non invasive method in reducing the duration & blood loss of third stage of labour (Medical Journal of Babylon – volume 7, No 3-4, 2010, pg 404-409)

Placental cord drainage reduces the third stage of labour and the amount of blood loss. But no difference is noted in the blood transfusion rate and the risk of postpartum haemorrhage (Cochrane review 2011-issue 9 by Soltani H, Hutchon DR)[3].

A Similar study showed that placental cord drainage reduces duration & blood loss during the third stage of labour. (French Cochrane Centre – 12th November 2012)[2]

Effectiveness of placental drainage (PLADRAINAGE) - a randomized clinical trial published at clinical trials. gov (US National Institute of Health), last updated on June , 2013[1] where the study was completed & results awaited

PHYSIOLOGY OF THIRD STAGE OF LABOUR

Understanding the physiology of third stage of labour is very important in the correct management of complications of third stage.

Third stage of labour begins soon after the delivery of foetus/foetuses and involves separation and expulsion of placenta with its entire membranes (Williams 23rd Pg. 146).

Conduction of third stage of labour should not be hurried, because after a very few minutes of delivery intense retraction of uterus occurs.

CAUSES OF PLACENTAL SEPARATION

Sudden decrease in the uterine size following delivery leads to ***decrease in the area of placental implantation site*** and the placenta increases in thickness to accommodate this reduced area. But as the ***placenta is less elastic, it is forced to buckle and the resulting tension pulls the deciduas*** .Hence placental separation follows because of ***disproportion between the size of placenta and the implantation site***[57]. Separation of foetal membranes follows as a result of greater decrease in the uterine cavity. Normally, placenta separates within few minutes after delivery.

Placental separation is mostly due to the mechanical effect of shearing, as the bulk of placenta cannot accommodate itself to the reduced placental site which is almost up to 10 cm or less[9].

Normally there will not be much resistance at the plane of cleavage. However the membranes are often very adherent and as there is no appreciable bulk, they are not sheared off the uterus by retraction/reduction in the surface area (Ian Donald).

After the delivery of the foetus, separation of placenta takes place. Shrinkage of the placental site followed by forcing downward of whole placental mass by the contraction of uterus leads to placental separation. (Mudaliar & Menon).

ULTRASOUND STUDIES OF PLACENTAL SEPARATION:

Herman et al[40] showed ultrasonographically that shearing forces upon the interface between placenta & myometrium depends on retro placental myometrial contraction. He divided the third stage into the following four phases based on ultrasonogram appearances.

1. ***Latent phase***;

Immediately follows delivery of the baby.

Myometrium contracts except retroplacental area which remains relaxed.

2. ***Contraction phase***;

Retroplacental myometrium contracts.

3. ***Detachment phase***;

Placenta is sheared off the decidua.

4. ***Expulsion phase***;

As a result of uterine contraction, placenta is expelled from the uterus.

Contraction that occurs prior to delivery of foetus, will not cause placental separation, as the myometrium is not having the necessary strain for placental detachment[41].

SIGNS OF PLACENTAL SEPARATION: (Williams 23rd Edition, pg: 397)

1. Uterus becomes firm and globular.

2. Sudden gush of bleeding.

3. Placental bulk in lower segment pushes the uterus upward.

4. Lengthening of infra vaginal portion of umbilical cord occurs because of descent of placenta.

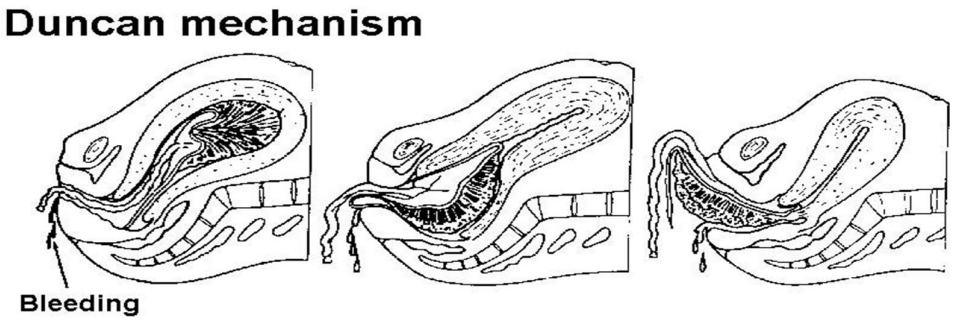
These signs appear within 1 minute – maximum up to 5 minutes.

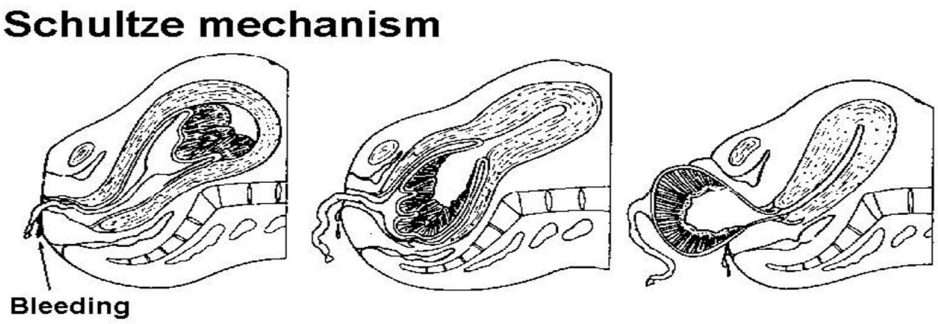
METHODS OF PLACENTAL SEPARATION:

Schultze method – central separation[9]:

Central portion of the placenta got separated first followed by a concentrically enlarging area so that the placenta bulges presenting the centre of foetal surface.

Earlier it was thought that this is due to collection of blood, behind the centre of placenta. But now it is recognized that this retro placental haematoma is the result of separation rather than the cause of separation.





Matthews Duncan's method – Peripheral separation[9]:

The whole placenta is sheared off the uterine wall and it descends sideways. The placenta may be folded on itself and the inferior margin of the placenta presents first (i.e., maternal surface of the placenta appears first).Blood escapes between the uterine wall and the separating placenta.

BLEEDING AFTER PLACENTAL SEPARATION IS ARRESTED BY FOLLOWING MECHANISMS :

At term around 500-800 ml of blood is circulating through the placenta. After the separation of placenta this has to be arrested within seconds or otherwise profuse haemorrhage will occur.

Bleeding after placental separation is arrested by (Arulkumaran, Management of labour, pg.286)

1. Contraction and retraction of uterine oblique muscle fibres around the blood vessels (like figure of 8) which causes compression.
2. Close apposition of uterine walls
3. Coagulation and fibrinolytic mechanisms are activated enormously around the placental site.

Two hormones are essential for the contraction of uterus after delivery of the foetus namely oxytocin and prostaglandins .Effects of these two hormones can be instantaneous. However if this effect does not occur

properly, then there will be bleeding from the placental site due to atonicity of uterus .The occurrence of atonicity is unpredictable and episodic. Many women having known risk factors deliver with minimal amount of blood loss, whereas others without any risk factors may bleed profusely after delivery[4].

The above cited mechanisms are aided by coagulation events at the placental site, whereby contraction and retraction of uterus causes mechanical occlusion of arterioles, thereby facilitating placental plug formation and activation of clotting cascade & fibrinolytic mechanisms. (Current progress in obstetrics & gynaecology, Jhon Studd, 2012, Volume 1)

Contraction of uterus causes ligation of oblique muscles around blood vessels, so that the blood cannot return back in to the maternal circulation. Congested veins rupture & sheer off the decidua basalis.(Cunningham 2001 : Fraser 2003)

EXPECTANT MANAGEMENT OF THE THIRD STAGE OF LABOUR[8]:

1. Waiting for signs of separation of placenta to occur.
2. Allow the placenta to deliver spontaneously (or) by gravity.

CLAMPING OF UMBILICAL CORD[7] (Early versus delayed):

- Two clamps are placed 4-5 cm from the foetal abdomen and the umbilical cord is cut in between.

- Cochrane Database review – Mc Donald Middle ton (2008) reported that delayed cord clamping up to 1 minute, increased the haemoglobin concentration by 2.2g/dl while compared with early clamping within 60 seconds. At the same time, early clamping reduced the risk of hyperbilirubinemia and the need for photo therapy by 40%.

- As per Williams's textbook of obstetrics – Early clamping of umbilical cord is followed, as a routine.

In normal physiology of the third stage where umbilical cord is not clamped, blood in the placental compartment drains in to the baby & this placental transfusion will be completed within 2-5 minutes after delivery. (Farrar 2011).***From mother' s view point, immediate unclamping of the cord & drainage of cord blood is close to the physiological process***[3]. Although it may be an intervention, it is much less than maintaining the clamping until delivery of placenta (Cochrane review 2011).

DELIVERY OF PLACENTA:

- It should not be attempted before the signs of placental separation.
- Traction on umbilical cord to pull the placenta should be avoided.

- Umbilical cord is kept slightly taut and uterus is lifted cephalad with the other hand and it is repeated until placenta reaches introitus. (Prendivillie and associates, 1986)
- ***Draining of cord blood reduces the bulkiness of placenta & allows the uterus to contract and retract, thereby aids in placental delivery*** (Wood 1997)[37]

  Placental blood drainage is recommended in the expectant management of labour – Hinching brooke trial (Rogers 1998).

Retained Placenta :

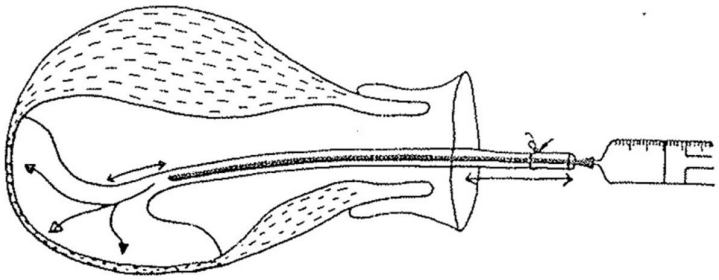
There is no consensus regarding the time after which a placenta is said to be retained. Usually if the placenta is not delivered even after thirty minutes to one hour after delivery it is called as retained placenta[11].

Conventional treatment for this is to start an oxytocin drip ,followed by manual removal under regional/general anaesthesia.

In rare cases if the placenta is not delivered with in this period it may be due to morbid adherence of placenta as in placenta accreta/ increta/percreta with an absence of plane of cleavage.

Cochrane review showed that umbilical oxytocin can be used effectively for the management of retained placenta[42]. For this Pipingas technique may be followed. In this technique, oxytocin is diluted in 30 ml

of saline & injected along umbilical vein using infant nasogastric feeding tube[43].



Pipingas Technique

In our study, placenta is considered as retained, if it is not separated within 30 minutes & those cases were excluded from the study.

ACTIVE MANAGEMENT OF THIRD STAGE OF LABOUR (AMTSL)

THREE COMPONENTS[14]

1. Use of uterotonics within 1 minute of delivery of baby.

2. Controlled cord traction.

3. Uterine massage.

AMTSL[20]

1. By facilitating delivery of placenta, the duration of third stage of labour is shortened thereby reducing the blood loss, leading to effective uterine contractions.

2. By avoiding uterine atonicity, PPH can be prevented. Third stage of labour that lasts 18 minutes or more is the best predictor of PPH & that is why early delivery of placenta is important.

Originally early cord clamping was included in active management of third stage of labour, but the timing of cord clamping has very little impact on the incidence of postpartum haemorrhage. A randomised control trial conducted by Ceriani Cernadas JM concluded that there was no significant difference in the incidence of postpartum haemorrhage associated with the timing of cord clamping[23].

However immediate cord clamping may reduce the amount of red blood cells received by the new born, whereas delayed cord clamping is associated with less incidence of intra ventricular haemorrhage, anaemia and late onset sepsis especially in preterm babies[29,30] .For these reasons, the collaborative ICM/FIGO Group did not include early cord clamping in the active management protocol.

Active management of third stage facilitates the delivery of placenta by increasing uterine contraction and prevents post partum haemorrhage by averting atonicity of uterus[23].

Active management of third stage of labour reduces the following[23];

1. Risk of post partum haemorrhage.
2. Postpartum anaemia.
3. Prolonged third stage of labour.
4. Blood transfusion requirements.
5. Use of therapeutic drugs for postpartum haemorrhage.

It is now recommended that AMTSL should be routinely practiced in all maternity hospitals and also there is no evidence to suggest that this should not include births at home or in health centres.

FIGO now advices if oxytocin or misoprostol is not available, skilled birth attendants should practice expectant or physiological

management of third stage of labour. This means that they should not begin cord traction before the uterus is well contracted and separation and expulsion of the placenta has begun, so that it allows the mother to expel the placenta spontaneously.

A Technical consultation held by the World Health Organisation for the prevention of postpartum haemorrhage in 2006 recommends the following[23]:

1. Administration of uterotonic soon after delivery of the baby, controlled cord traction and uterine massage should be included in active management of third stage of labour.
2. Oxytocin should be preferred than oral /sublingual/rectal misoprostol for prevention of post partum haemorrhage.
3. As dreadful complication such as uterine inversion can occur following inappropriate cord traction, active management of third stage of labour should always be carried out by skilled birth attendants.

1. <u>ADMINISTRATION OF OXYTOXIN AND OTHER URETEROTONICS</u>

- Oxytocin is the choice of ureterotonic.(10 units given intramuscularly within 1 minute of delivery&if needed 10-20 units in 500ml of RL/NS).
- It increases the amplitude and frequency of uterine contractions.

- It acts within 2-3 minutes of administration (Gulmezoglu et al).
- Half life is about 3-5minutes.
- Fluid retention and water intoxication can occur if it is given in large volumes of electrolyte free IV fluids.
- Bolus intravenous injection can cause profound hypotension in term women due to peripheral vasodilatation (Secher et al 1998).

SECOND GROUP OF OXYTOCICS – (includes methyl ergometrine)

- It increases the muscle tone of uterus by causing contraction of myometrium compressing the myometrial blood vessels.
- Half life is about 120 minutes.
- It should be refrigerated.
- Safe effective dose is 0.2 -0.5 mg i.m./i.v.
- Major side effects include nausea, vomiting and hypertension.
- Contraindicated in hypertension, pre eclampsia &heart disease complicating pregnancy.

THIRD GROUP – (includes prostaglandins. – PG $F_{2\alpha}$, PG E_1)

- They cause contraction of myometrium by increasing calcium release from the cell.
- Misoprostol 800-1000μg is the 2^{nd} line drug when PPH is not controlled by oxytocin [Hofmeyr et al 2005].

- Side effects include nausea, diarrhoea, vomiting, pyrexia &shivering.
- PG F2 alpha [carboprost] is mainly used in intractable hemorrhage when other measures fail .Usual dose is 250µg intra muscularly, and it can be repeated every 15 minutes.

Either ergometrine or misoprostol should not replace oxytocin as a routine in the active management of third stage of labour (Gulmezoglu 2002)

2.<u>CONTROLLED CORD TRACTION</u>[20] :

- After delivery of the baby, wait till the cord pulsation stops.
- Apply first cord clamp on the umbilical cord ,4-6cm from the baby and the second clamp next to it and closer to the mother .
- Cut between two clamps using sterile scissors.

Early cord clamping is done in following cases;

1. Premature babies –less than 36 weeks.
2. Asphxiated babies and where immediate resuscitation is needed.
3. HIV (Human immunodeficiency virus) infected mothers/Rh negative mothers.
4. If the bleeding is profuse.

- With one hand the end of clamped cord is to be held and the other hand is kept over the abdomen just above the pubic symphysis.
- Uterus is stabilized by applying counter pressure upward and backward to prevent inversion.
- Encourage mother to push with the first strong contraction of uterus.
- Gentle controlled cord traction is applied to deliver the placenta. Counter pressure on the uterus is applied continuously.
- If the placenta is not descended within 30-40seconds of controlled cord traction then the cord is held gently and wait till the uterus is well contracted.
- Controlled cord traction is repeated with next contraction along with applying counter pressure on the uterus.
- As the placenta delivers it is being held in two hands and gently turned in one direction causing the membranes to be twisted on them until it is slowly delivered.
- If the membranes are not completely removed, then cervix is examined gently with the help of sponge holding forceps to remove any visible pieces of membranes.
- Make sure that the mother's urinary bladder is empty. Controlled cord traction is associated with less blood loss and shorter third stage. (Enkin et al 1995).

3. UTERINE MASSAGE[20]

- Soon after the delivery of placenta the fundus of the uterus is massaged with the hand over the abdomen until it is contracted.
- This is to be done firmly enough to make the uterus to contract and to expel the clots. But not so strongly, as it will cause pain.
- Ensure that the placenta was expelled entirely.
- Ensure that the uterus is not relaxed after stopping the uterine massage.
- Palpate the uterus every 15 minutes and assure that the uterus is contracted well.
- Women are to be taught, how to check that, her own uterus is contracted and massage it by herself until it is well contracted.
- Repeat the uterine massage if needed.
- After separating the labia, the perineum &vagina are to be inspected carefully for any lacerations.
- Inform the mother that she will feel cramps while giving uterotonics.
- Throughout the procedure support & reassurance is to be given to the woman.

Disadvantages of AMTSL[57]

1. Increase in diastolic BP>100mmHg.
2. Increase in postpartum nausea, vomiting and headache

ESTIMATION OF BLOOD LOSS[20]

1. Visual estimation.
2. Use of blood collection drape.
3. Use of Kanga method as in East Africa.
4. Blood collection in a kidney tray or other calibrated container.

Visual Estimation of Blood Loss

- It is not accurate.
- Published data showed that visual estimation of blood loss often underestimated the PPH by 30 – 50% (Chau,et al)
- As the blood loss increases, the inaccuracy of visual estimation of blood loss is also increased (Duthie et al).
- Hence, such under estimation of blood loss delays the diagnosis and timely management if PPH occurs.

Kanga Method Of Estimation

- It was proved very effective in Tanzania.
- Standard Kangas are made up of large pieces of cloth of similar weight, size and fabrics.
- They can be wrapped around the perineum by themselves.

- It can be used in the lower level health facilities to estimate the blood loss accurately.
- Studies proved that if two kangas are saturated with blood ,PPH can be diagnosed accurately.

By Using Cholera Bed :

- It is also an effective method.
- For this, women's buttocks will be placed over the hole in the bed, and the baby delivers on to the bed rather than off the bed.
- A container (calibrated) should be placed under the hole in the bed.
- Using a gloved hand, all blood on the bed, must be collected in to the hole

USAGE OF BLOOD COLLECTION DRAPE[20]

ADVANTAGES

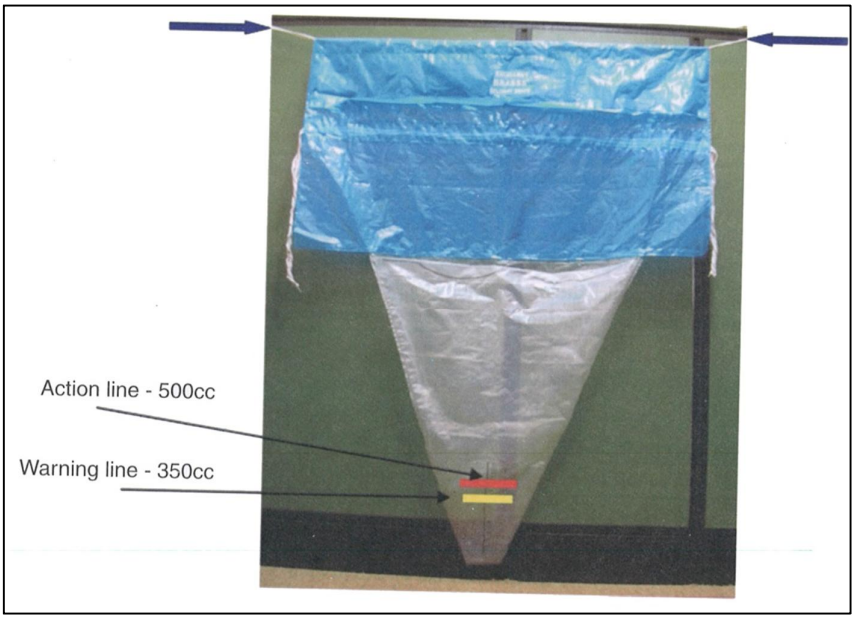
- Plastic blood collection drape is a very simple device to assess the blood loss.
- Immediately after assessing the blood loss, corrective measures can be taken.
- Skilled birth attendants, at lower level health facilities, take initial steps to stop the bleeding / begin fluid replacement / transfer the mother to a higher institution.

- Hospitals can start emergency management soon after the excessive blood loss is recognised.

STRUCTURE

- It is a funnel shaped plastic bag, used for measurement of blood loss.
- Upper rectangular portion to be placed under women's buttocks
- Funnel shaped/ triangular portion of drape hangs from the edge of delivery table or it can be placed flat on the delivery table.
- A stiff wire holds the pouch open to collect all the blood.
- Funnel is calibrated with two lines namely yellow alert line at 350 ml mark, red action line at 500 ml mark for the diagnosis of PPH.

STRUCTURE



Usage of Blood Collection Drape

Delivery of the Baby

↓

Rectangular portion of drape is placed under buttocks

with the funnel portion lying on the table

↓

Blood drape to be tied around woman at two places (Waist and Hip)

↓

Thick, rolled towel/cloth is placed underneath women's shoulder

(To facilitate downward flow of blood and to avoid pooling of blood under her back)

↓

Using gloved hand, sweep all blood in to the bag

↓

Assess the blood loss by measuring the amount of blood collected in the funnel

↓

Using both hands, grasp the opposite edges of the top of the funnel and compare the amount of the blood loss in relation to the two lines (Alert &Action)

↓

No need to remove the drape to measure the blood loss

COLLECTION OF BLOOD

MEASUREMENT OF BLOOD LOSS

Cleaning and storage of drape

For reusing the drape, following three steps are to be followed.

1. Decontamination: By immersing in 0.05% bleach for 10 minutes.
2. Wash thoroughly with detergent & water and then air dry.
3. No need for sterilization as the drape is not going into the body.
4. After cleaning, the drape is folded and stored.

POSTPARTUM HAEMORRHAGE

DEFINITION

Haemorrhage that occurs after delivery of the baby is termed as postpartum haemorrhage. In quantitative terms it is defined as any blood loss equal to or more than 500ml after vaginal delivery or 1000ml following caesarean section or 10% fall in haematocrit when compared to the pre labour values.

Even with accurate measurement, the amount of blood loss is often less important than its effect on woman, which depends on her volume of blood and other associated health factors (eg - Hb % status) . Hence it is being suggested that any blood loss that leads to a major physiological change like fall in blood pressure, is taken in to account[23]. Mortality due to PPH is different from other obstetric causes because the time interval between delivery to the death of mother is short.

After delivery of the fetus if a woman bleeds profusely and if no treatment is given, then death will occur within 2 hours. In contrast, Ante partum Haemorrhage will lead to death within12 hours, obstructed labour within 2 days, if there is no intervention[4].

This difference is due to following two reasons:

1.Placenta normally occupies 20cm diameter area of the maternal surface of uterus. If after delivery of placenta, the normal contractile mechanism doesn't come into play, then uterus continues to bleed from that placental site.

2.Spiral and arcuate branches have a direct connection with aorta via uterine, internal iliac and common iliac arteries.

AETIOLOGY AND RISK FACTORS

Aetiology:

PPH is usually due to abnormalities in any one of the following 4 basic processes (referred as 4 Ts mnemonic)

1.Tone (inadequate uterine contraction)

2.Tissue (retained products of conception/ clots)

3.Trauma

4.Thrombin (abnormalities in the coagulation)

RISK FACTORS (RCOG GREEN TOP GUIDELINE, no.52 May 2009/ Minor revision 2011)[5]

Period	Risk factors
Pre-conception	Age more than 40, not multiparity Asian ethnicity BMI >35 kg/m^2
During pregnancy	Anaemia <9g/dl placenta previa placental abruption Pre-eclampsia or gestational hypertension Induction of labour
During delivery	Prolonged labour Operative vaginal delivery/caesarean section Birth weight >4 kg Episiotomy, Retained placenta Pyrexia in labour

However PPH can occur even in women without any risk factors cited above. Numerically, atonic PPH can occur more in women without risk factors than those with risk factors

Patho-physiology:

Blood vesssels supplying the placental bed pass through the interlacing fibres of the myometrium. Myometrial contraction is the main force for the separation of the placenta and constriction of the blood vessels and this normal physiological phenomenon is known as living ligatures/physiological sutures.

Bleeding occurs from the placental site of the uterus when the placenta got separated. If there is failure of this normal living ligature mechanism of myometrium, then it will lead to atonicity of the uterus.

Considerable blood loss can be tolerated by young and healthy women for a longer period even without any cardiovascular changes.

Severe Haemorrhage causes shock, morbidity &death.

Shock is divided into three divisions according to the amount of blood volume lost.[23]

Degrees	Amount	Features
Mild	20% of blood volume	Decreased perfusion of non-vital organs.(skin, fat, muscle) Pale, cool skin
Moderate	20-40% of blood volume	Decreased perfusion of vital organs (liver, kidney etc.). Oliguria and or anuria. Drop in BP.
Severe	>40% of blood volume	Decreased perfusion to heart, brain. Restlessness, agitation, coma, ECG and EEG abnormalities. Cardiac arrest.

PREVENTION

Only 40% of women with PPH have identifiable risk factors[24].

Prevention of PPH includes following factors[20]:

1. Antenatal risk assessment.
2. Developing birth preparedness.
3. Treatment of anaemia and other risk factors to withstand PPH sufficiently.
4. Appropriate management of labour.
5. Harmful traditional practices (eg,pushing on uterus to expel baby) to hasten delivery should be avoided.
6. Prevent dehydration.
7. Encourage passage of urine frequently.
8. Avoid pushing before full dilatation.
9. Early detection & quick management of haemorrhage.
10. Active Management of Third stage of Labour.

TREATMENT[23]

With the use of mnemonic HAEMOSTASIS, systematic and step-wise management of PPH can be achieved. It is divided into two parts.

General Medical Management:

H – Call for help.

In case of major PPH, senior obstetrician and anaesthetist, theatre staffs, blood bank staffs should be alerted.

A – Assess (vitals, blood loss) and resuscitate.

Vitals assessment – level of consciousness, B.P, Pulse rate, urine output, oxygen saturation.

Estimation of blood loss is done by various methods.

Two large bore cannulae are inserted. Blood for cross matching, Complete Blood Count, Renal Function Test, Liver Function Test is taken.

Initial fluid Resuscitation - 1 litre of blood loss – needs replacement with 4 to 5 litres of crystalloid (0.9% Normal saline/ ringer lactate) until blood available.

Golden Hour:

It is the time at which prompt resuscitation should be commenced to ensure the best chances of survival and if the patient is not efficiently

resuscitated during this period, the probability of survival decreases sharply.

For general acute management of PPH, “RULE of 30” is applied.

30% of blood volume loss is indicated if[26]

- Pulse rate increased by 30/min.
- Respiratory rate more than 30 /min.
- Systolic BP decreases by 30mmHg.
- Urine output < 30ml/hour.
- Haematocrit drops > 30%.

Shock index[27]:

- It is calculated by pulse rate / systolic B.P.
- The normal value is 0.5 – 0.7.
- If it is > 0.9, it indicates shock that needs urgent resuscitation.

Establish aetiology by

1. Examining the tone of the uterus.
2. Excluding trauma / retained products of conception.
3. Bleeding Time, Clotting time monitoring.

Ecbolics:

As atonic PPH is the most common cause, medical management of atonic PPH consists of

1. Oxytocin 10 units slow intravenously
2. Methergine 0.2 mg i.m/i.v
3. Oxytocin infusion
4. 15-methyl $PGF_2\alpha$ (carboprost) i.m
5. Rectal misoprostol

Blood & Blood products transfusion needed if

1. Continuous bleeding
2. >30% of blood volume loss
3. Despite resuscitation, haemodynamically unstable

M – Massage the uterus. Either manually with keeping hand on the fundus of uterus or bimanually with one hand kept in the anterior fornix of vagina and another hand kept on the posterior aspect of the uterus.

It is a very simple and effective method to reduce the bleeding if the uterus remains atonic.

O – Oxytocin infusion, Prostaglandins.

In order to maintain the contraction of the uterus, oxytocin can be given slow intravenously or as an infusion (40 units in 500 ml of 0.9% normal saline at the rate of 125 ml per hour).

If the uterus remains atonic even after oxytocin, ergometrine should be given.

Carboprost ($PGF_2\alpha$) one ampoule can be given intra muscularly, as a second line of drug if atonicity persists, as it is highly effective (80 – 90%) in cases refractory to oxytocin and ergometrine.

Misoprostol (PGE_1 analogue) has been used for the management of PPH. In a placebo randomised controlled trial (BJOG 2004:111:1014-1017) it was shown that misoprostol was not associated with any decrease in maternal mortality, blood transfusion, additional use of other uterotonics & it was associated with increased rate of pyrexia & shivering.

However, another unblinded trail conducted by Lokugamage[34] AU, Sullivan KR, Niculescu I et al, showed better clinical response with misoprostol (rectal) than with combination of syntometrine and oxytocin.

SURGICAL MANAGEMENT: (STASIS)

S- Shift the patient to the operation theatre. Anti-shock garment to be applied especially if transfer is required.

T- Successful use of uterine balloon **t**amponade was reported using number of various devices like Foley's catheter, a condom, Sengstaken – Blakemore oesophageal catheter.

A-Application of compression sutures like B-Lynch or Modified B-Lynch if bleeding persists.

S- Systematic pelvic devascularisation to be done as the next step if bleeding persists wherein uterine, ovarian and internal iliac arteries are ligated.

I- Interventional radiology. Arterial embolisation was first described in 1979. Success rate may be as high as 70 – 100% and it preserves fertility. But the need of specialised equipment and expert radiologists are its limitations.

S- Subtotal or total hysterectomy is the final option and it should not be delayed if other measures are futile.

MATERIALS AND METHODS

1, Type & place of study.

It is a randomised clinical controlled trial on 400 pregnant women admitted to labour ward at R.S.R.M. Lying in Hospital, Stanley medical college ,Chennai.

2, Duration of the study:

January 2013- December 2013.

3, Inclusion criteria:

a. Primi / mutigravida (upto third gravida)

b. Age group between 18-35 years.

c. Term, singleton, alive pregnancy.

d. Vertex presentation with adequate liquor.

e. Average size foetus (E.F. Wt 2-4kg)

f. Expected to have spontaneous delivery.

(Augmentation with oxytocin included)

4, Exclusion criteria:

a. Anaemia / preeclampsia / coagulation disorder complicating pregnancy.

b. Overdistended uterus (hydromnios / multiple pregnancy / large baby).

c. Antepartum haemorrhage.

d. Induced labour.

e. Instrumental delivery.

f. Previous LSCS.

g. Premature rupture of membrane.

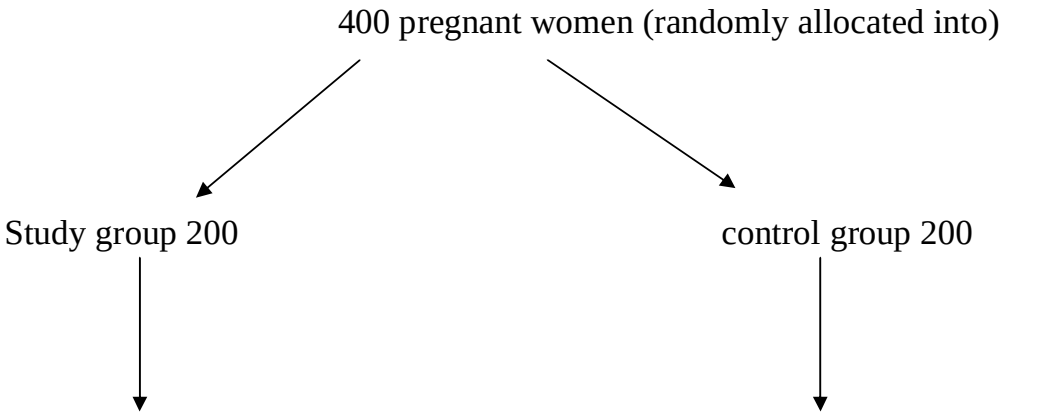
h.Retained Placenta.

PROCEDURE

- Detailed history was taken from all women.
- General and obstetric examinations were done in all cases.
- Gestational age was confirmed by menstrual history, ultrasonogram, and abdominal examination.
- Routine urine and haematological examination were done.
- Vitals, uterine contraction, foetal heart rate and progress of labour were monitored carefully using partogram.

- Labour was augmented with oxytocin in active phase of labour.
- All women in the study group were explained in detail about the procedure of cord blood drainage and informed consent was obtained.

5, TYPES OF INTERVENTION:



Blood collection Drape was applied in both groups after delivery of the baby. Placenta was delivered by controlled cord traction in both groups.

Injection oxytocin 10 units i.m. was given after delivery of foetus in both groups. As soon as the placenta delivered, it was examined thoroughly to find out any missing cotyledons or membranes.

All women in both groups were examined carefully, for tears in cervix vagina, perineum or para urethral area.

Episiotomy was sutured in layers, if it was given.

Women in both groups were observed & vitals monitored for two hours.

Every 15 minutes, uterus was palpated and assured that the uterus contracted well.

6. TYPES OF OUTCOME MEASURED

a. Duration of third stage of labour:

Third stage of labour begins after delivery of foetus and it involves separation and expulsion of placenta with its entire membranes.

It was calculated using a stopwatch.

b. Measurement of blood loss:

Visual estimation of blood loss always has inaccuracies. In our study, blood loss was measured using a drape.

Mops used for episiotomy suturing were discarded.

7. OTHER OUTCOME MEASURES

1.Occurence of postpartum haemorrhage

2.Need for blood transfusion

3.Haemoglobin difference between antenatal and post natal period (48 hours after delivery).

Postpartum haemorrhage (PPH):

Those women who had blood loss ≥ 500ml following delivery of foetus was noted & management of PPH was done.

Minor PPH:

Blood loss between 500- 1000ml and it is not associated with any signs and symptoms of shock.

Major PPH:

Blood loss more than 1000ml and is associated with continuous bleeding / signs of shock.

Blood transfusion was given depending on the clinical degree of anaemia and the haemoglobin status of women.

Repeat haemoglobin was done in all women of both groups, 2 days postnatally. Haemoglobin difference between antenatal and postnatal period was calculated and compared between study and control groups.

After collecting all data, it was tabulated in a master chart. The results were analysed using the Stastistical Package for Social Science (SPSS) version 11.5.

The results were expressed as frequency, mean ± standard deviation, median. Statistical comparision was done using Chi square test / independent t test / paired t test.

Two tailed P value was calculated.P value < 0.05 is considered as significant & if the value is < 0.001 it is considered as highly significant.

RESULTS

PROFILE OF STUDIED CASES

Table – 1 Age Distribution

AGE (in yrs)	CONTROL		STUDY	
	No	%	No	%
18 – 20	15	7.5	18	9
21 – 25	139	69.5	119	59.5
26 – 30	36	18	54	27
31 – 35	10	5	9	4.5
Total	200	100	200	100
Mean	23.47		24.18	
S.D	3.07		3.07	
P Value	0.14			

Age of selected women, varies between 18-35yrs. While comparing the age group between the study and control groups, 7.5% of control and 9% of study group were between 18-20yrs; 69.5% of control and 59.5% of study group are in the age group of 21-25 yrs; 18% of control, and 27% of study group are in the age group of 26-30 yrs; 5% of control, and 4.5% of study group were in the age group of 31-35 yrs.

Mean age of control group was 23.47 &study group was 24.18.Using Pearson – Chi Square test, P Value was calculated. P value is 0.140 which is not significant.

AGE DISTRIBUTION

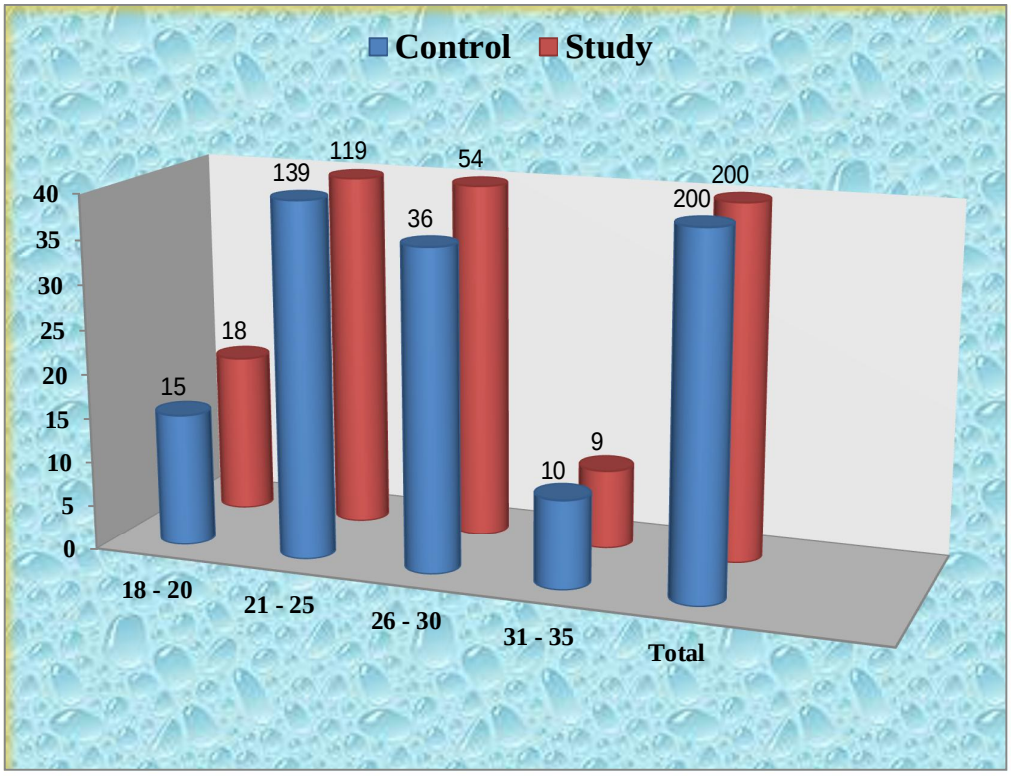


Table – 2

ANTENATAL CARE

ANTENATAL CARE	CONTROL		STUDY	
	No	%	No	%
Booked	192	96	194	97
Un booked	8	4	6	3
Total	200	100	200	100
P Value	0.58			

Those who had at least 5 antenatal visits, not only in our hospital but also at outside are considered as booked cases. 96% of control group and 97% of study group were booked cases.

There is no significant variance between control and study groups. P Value calculated using Pearson chi square test. P Value is 0.58 which is not significant.

ANTE NATAL CARE

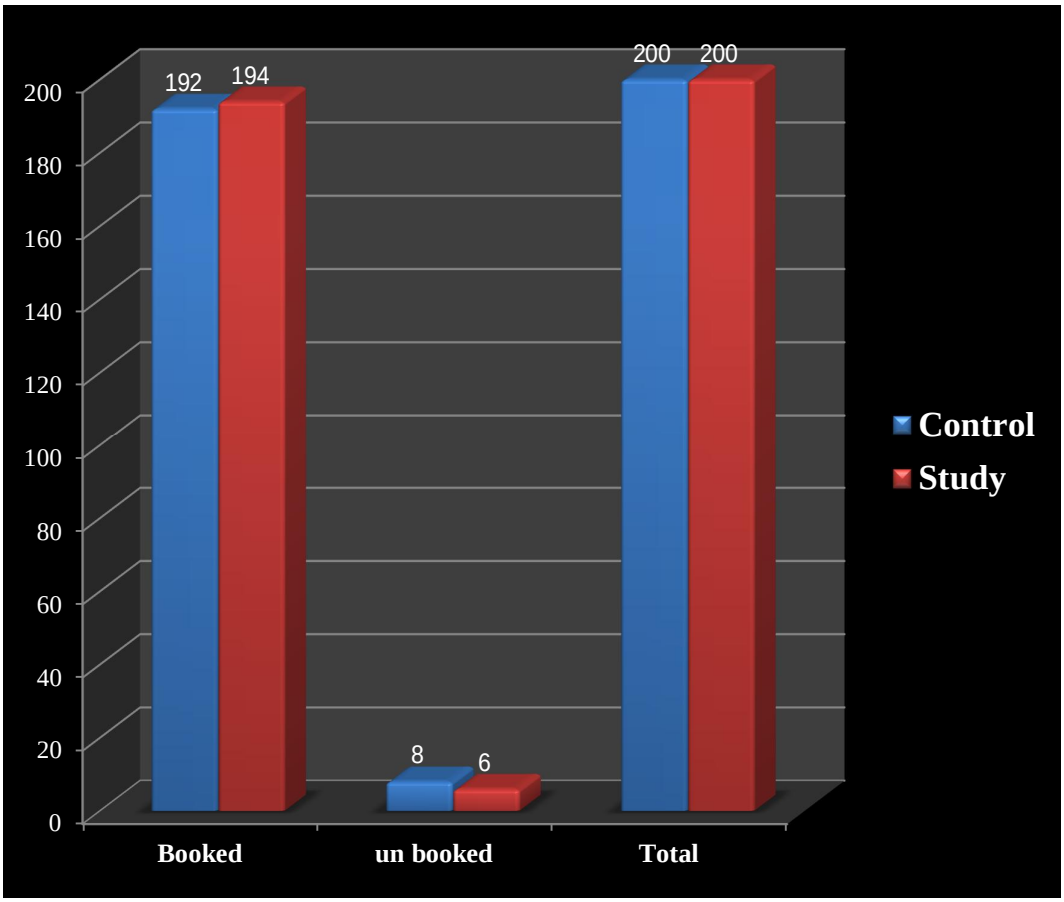


Table – 3

OBSTETRIC FORMULA

OBSTETRIC FORMULA	CONTROL		STUDY	
	No	%	No	%
Primigravida	103	51.5	121	60.5
Multigravida (Up to G_3)	97	48.5	79	39.5
Total	200	100	200	100
P Value	0.070			

While comparing obstetric formula between control and study groups, 51.5% of control group and 60.5% of study group were primigravida. 48.5% of control and 39.5% of study group were multigravida. P value calculated using pearson chi-square test. P value was 0.070 which is not significant.

OBSTETRIC FORMULA

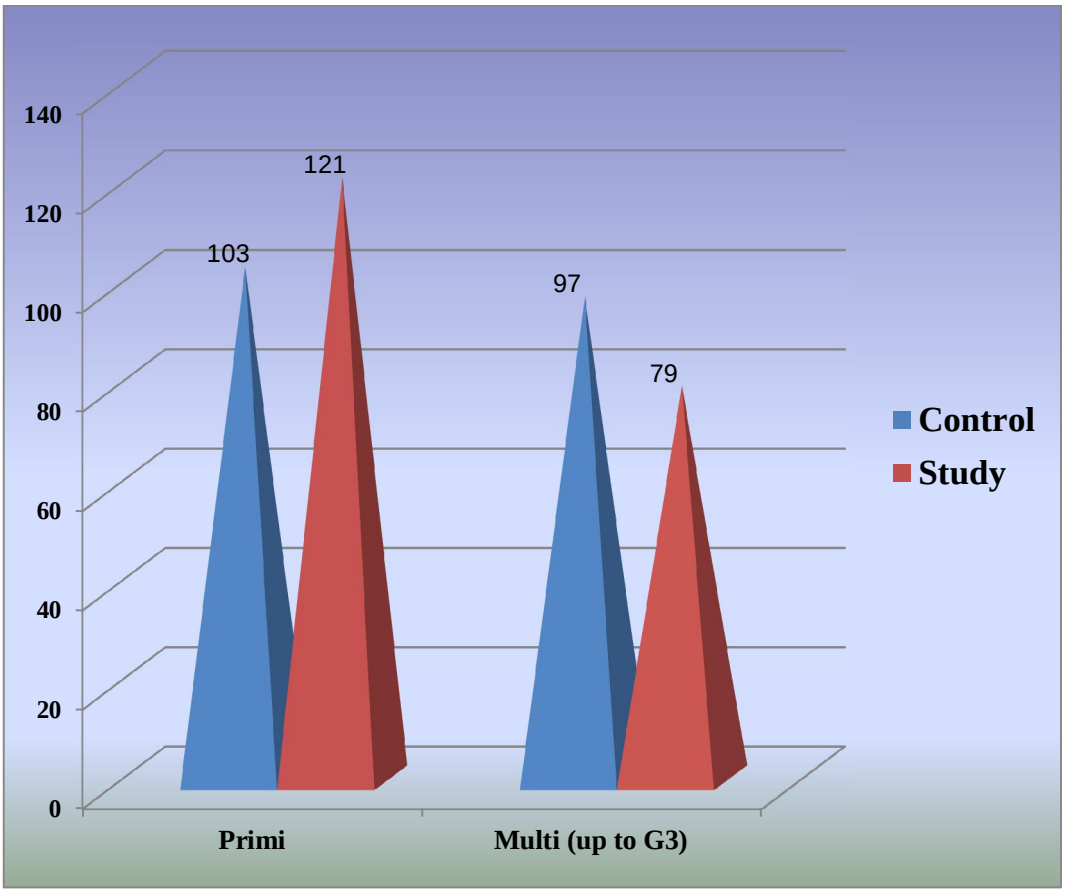


Table -4

QUANTITATIVE PARAMETERS

PARAMETERS	CONTROL		STUDY		P VALUE
	MEAN	S.D	MEAN	S.D	
Height(cm)	154.3	0.051	154.5	0.04	0.688
Weight(kg)	59.21	6.9	59.15	6.5	0.929
BMI	24.85	2.72	24.77	2.60	0.743

BMI →Body mass Index

S.D → Standard deviation

Quantitative parameters like height, weight and BMI were calculated & compared between control and study groups. Mean height was 154.3 cm in control group and 154.5 cm in the study group. Mean weight was 59.21 kg in control group and 59.15 kg in study group. Body mass index calculated by weight / height (in m^2). Mean value of BMI in control group was 24.85 and 24.77 in study group.

P value was calculated by using t test and as shown in table there was no significant difference between control and study group regarding height, weight and BMI.

QUANTITATIVE PARAMETERS

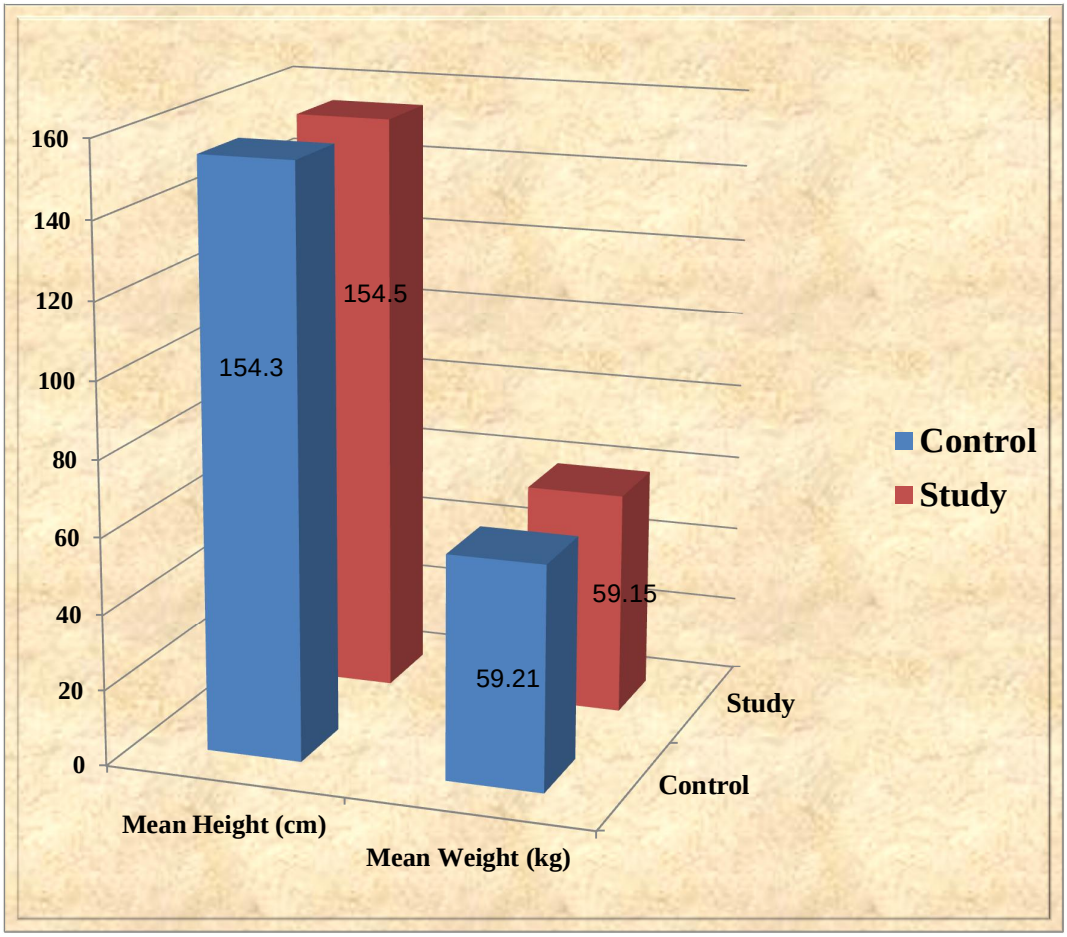


Table – 5

GESTATIONAL AGE

GESTATIONAL AGE (in wks)	MEAN	S.D
Control	38.22	0.58
Study	38.31	0.61
P Value	0.126	

S.D-Standard Deviation.

Those who have completed 37 gestational weeks were included in the study. Those who have crossed 40 weeks were excluded from the study. Mean gestational age in the control group was 38.2 and in the study group was 38.31.

P value was calculated using t test .P value was 0.126 which is not significant.

GESTATIONAL AGE (IN WEEKS)

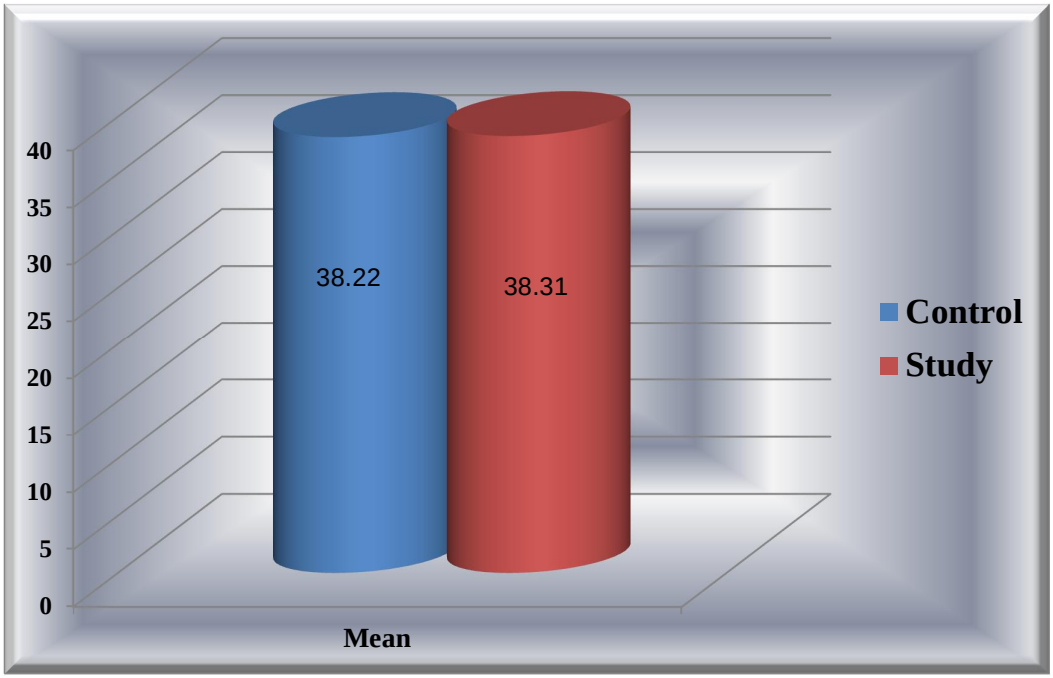


TABLE – 6

AUGMENTATION OF LABOUR WITH OXYTOCIN

OXYTOCIN ACCELERATION	CONTROL		GROUP	
	No	%	No	%
Yes	181	90.5	184	92
No	19	9.5	16	8
Total	200	100	200	100
P Value	0.596			

Labour was augmented with oxytocin drip, in active phase of labour in both groups.

Almost 90.5% of control group and 92% of study group were augmented with oxytocin.

P Value was calculated using Pearson chi-square test. P value was 0.596 which is not significant.

AUGMENTATION OF LABOUR WITH OXYTOCIN

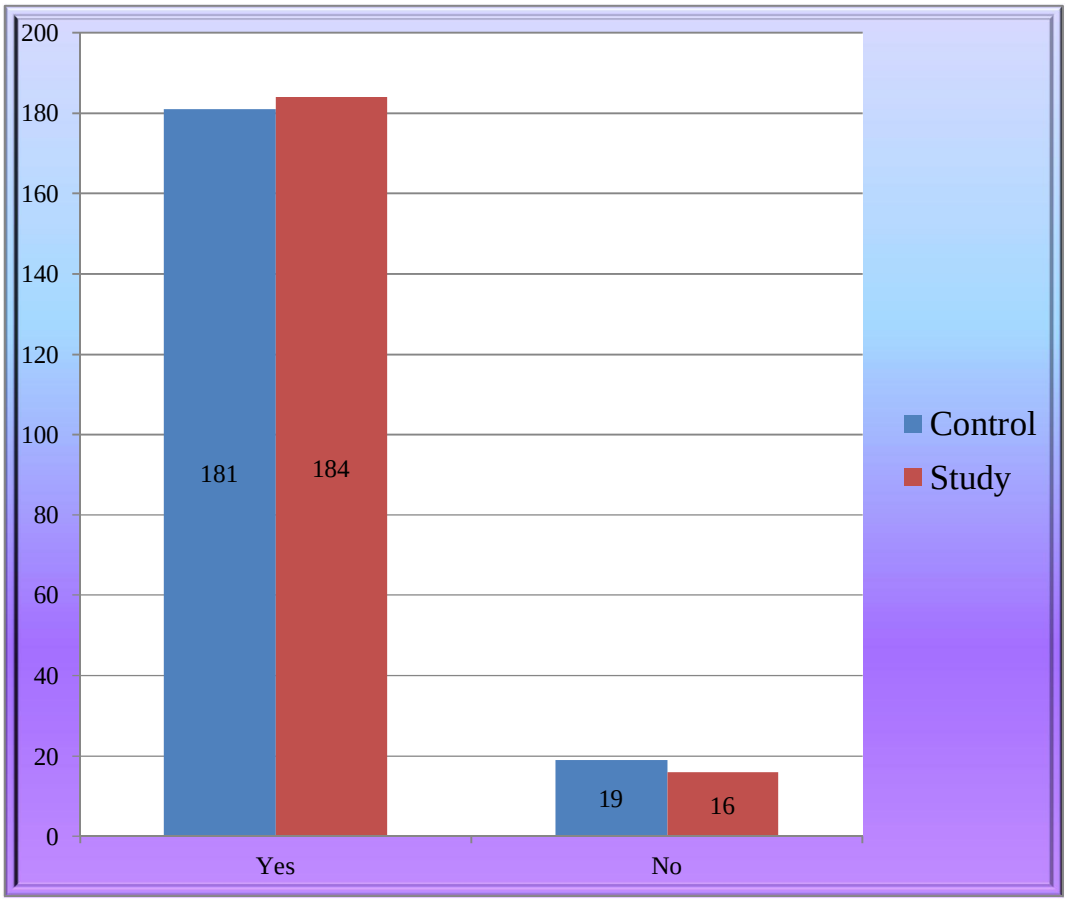


TABLE – 7

DURATION OF STAGES OF LABOUR

DURATION OF STAGES OF LABOUR	CONTROL				STUDY				P VALUE
	No	Mean	S.D	S.E of mean	No	Mean	S.D	S.E of mean	
I (in hrs)	200	8.13	2.72	0.192	200	8.17	2.66	0.188	0.85
II (in mnts)	200	26.60	9.025	0.638	200	25.69	8.11	0.574	0.29
III (in mnts)	200	5.06	1.38	0.097	200	3.56	1.32	0.093	<0.001

S.D-Standard Deviation

S.E-Standard Error

Since prolonged labour precipitates postpartum haemorrhage, duration of stages of labour was compared between study and control groups.

Mean duration of first stage is 8.13 hrs in control group and 8.17 hrs in study group. P value was calculated by t test which was 0.85, that is not significant.

Mean duration of second stage of labour in control group was 26.60 minutes. Standard deviation was 9.02. Mean duration in study group was 25.69 minutes. Standard deviation was 8.11. P value (calculated by t test) was 0.29, that is not significant.

Mean duration of third stage of labour in control group was 303.6 seconds (5.06 minutes) &in study group was 214 seconds (3.5 minutes).

P Value was < 0.001(t test) which is highly significant.

DURATION OF STAGES OF LABOUR

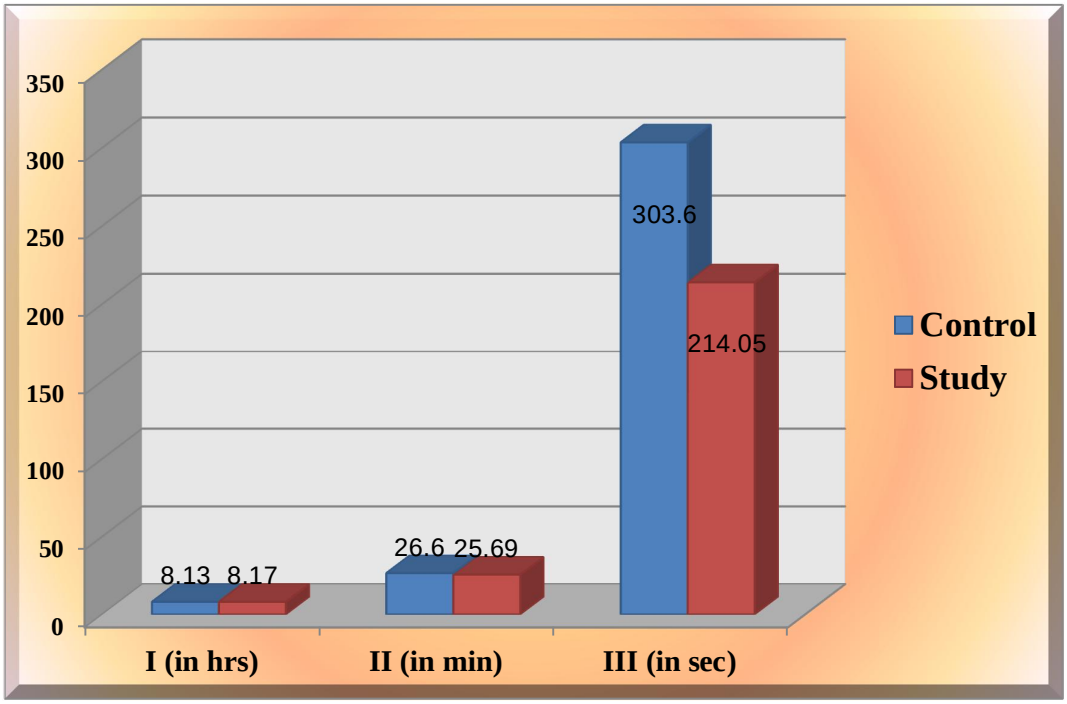


Table – 8

MODE OF DELIVERY

MODE OF DELIVERY	CONTROL		STUDY	
	No	%	No	%
Labour Natural with Episiotomy	183	91.5	178	89
Labour Natural with LP	8	4	7	3.5
Labour Natural	9	4.5	15	7.5
Total	200	100	200	100
P Value	0.441			

LP → Perineal Laceration

Mode of delivery was compared between control and study groups. Preliminary mediolateral episiotomy was given after crowning of head in 91.5% of control group and 89% of study group. Perineal laceration occurred in 4% of control group and 3.5% of study group. 4.5% in the control group and 7.5% in study group were delivered by labour natural.

P Value calculated by Pearson chi-square test. P value was 0.441 which is not significant.

MODE OF DELIVERY

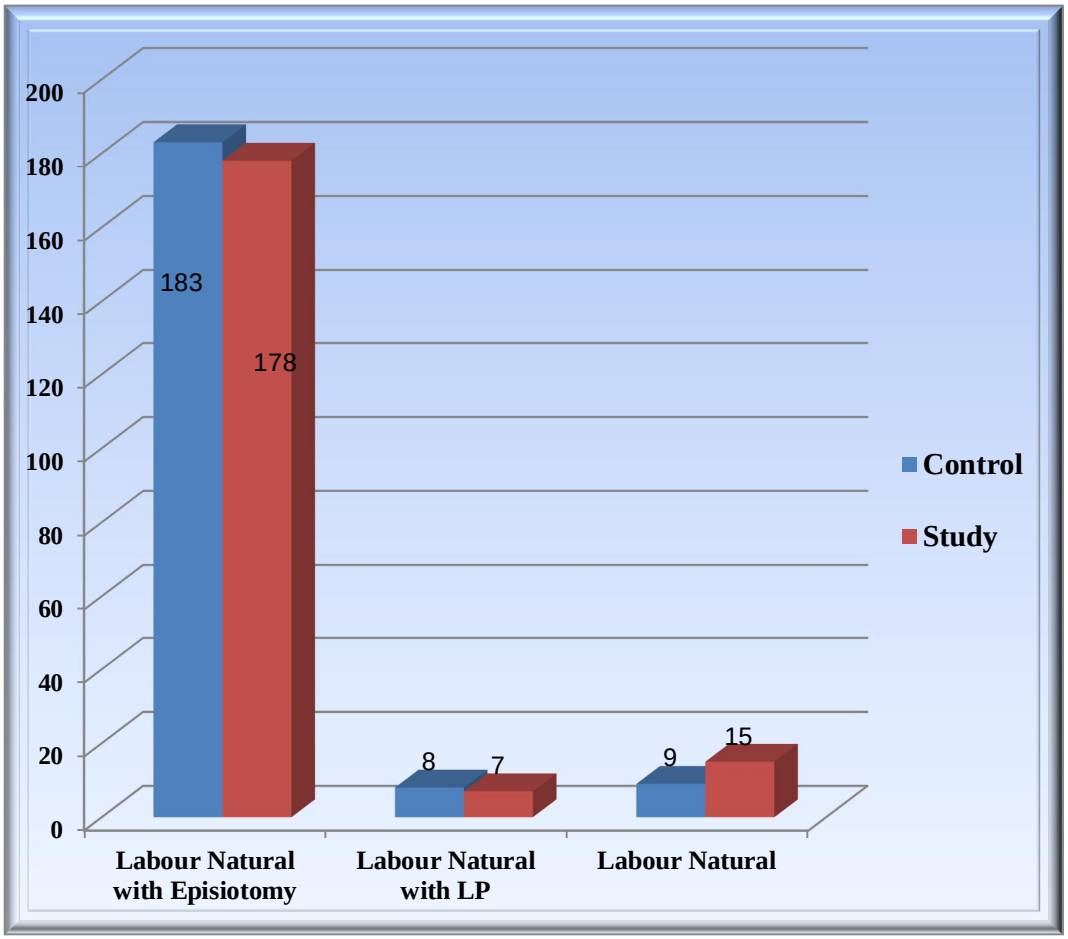


TABLE – 9

BLOOD LOSS DURING STAGE III OF LABOUR

BLOOD LOSS DURING III STAGE (in ml)	CONTROL		STUDY	
	No	%	No	%
≤ 100 ml	10	5	30	15
101 – 200	40	20	92	46
201 – 300	84	42	54	27
301 – 400	42	21	16	8
401 – 499	7	3.5	4	2
≥ 500	17	8.5	4	2
Total	200	100	200	100
Mean	308.95		185.58	
S.D	173.86		110.09	
P Value	0.001			

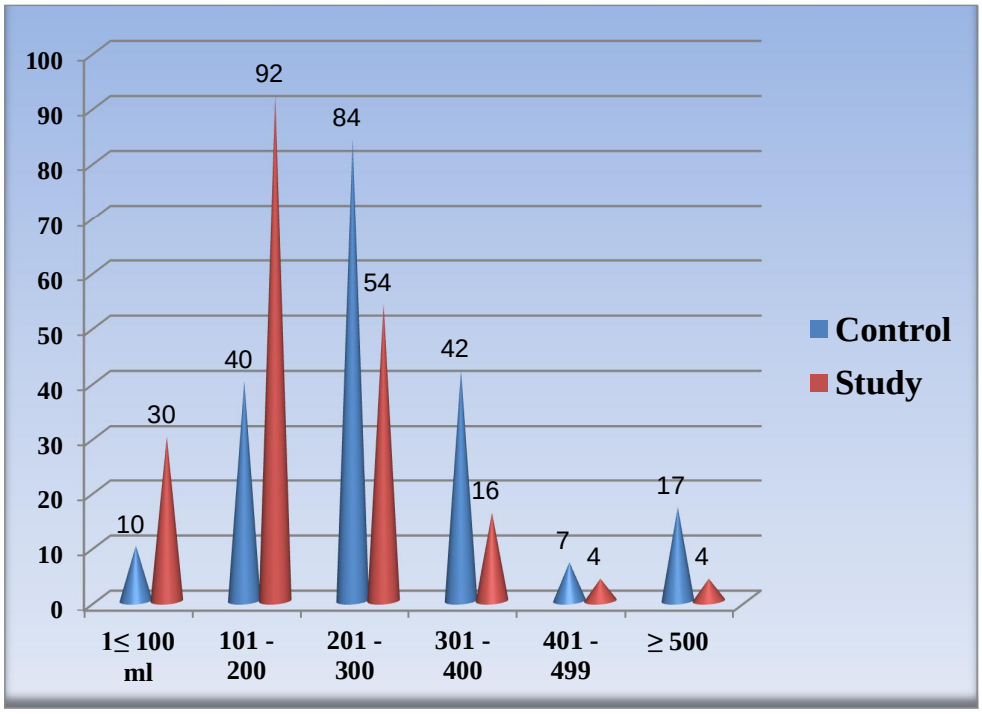
Blood loss during third stage of labour was measured using a calibrated drape. Mops used for episiotomy wound were discarded.

5% in control group and 15% in study group had blood loss < 100 ml. 20% in control group and 46% in study group had blood loss between 101-200 ml. 42% in control group and 27% in study group had blood loss between 201-300 ml. 21% in control group and 8% in study group had blood loss between 301-400 ml. 3.5% in control group and 2% in study group had blood loss between 401-500 ml. 8.5% in control group and 2% in study group had blood loss more than 500 ml.

Mean blood loss in study group was 185 ml and in control group was 308 ml .Difference between two groups was 123 ml.None of the cases in both groups had blood loss > 1000ml.

P value was calculated by using Pearson chi-square test which was <0.001 that is highly significant.

BLOOD LOSS DURING STAGE III OF LABOUR



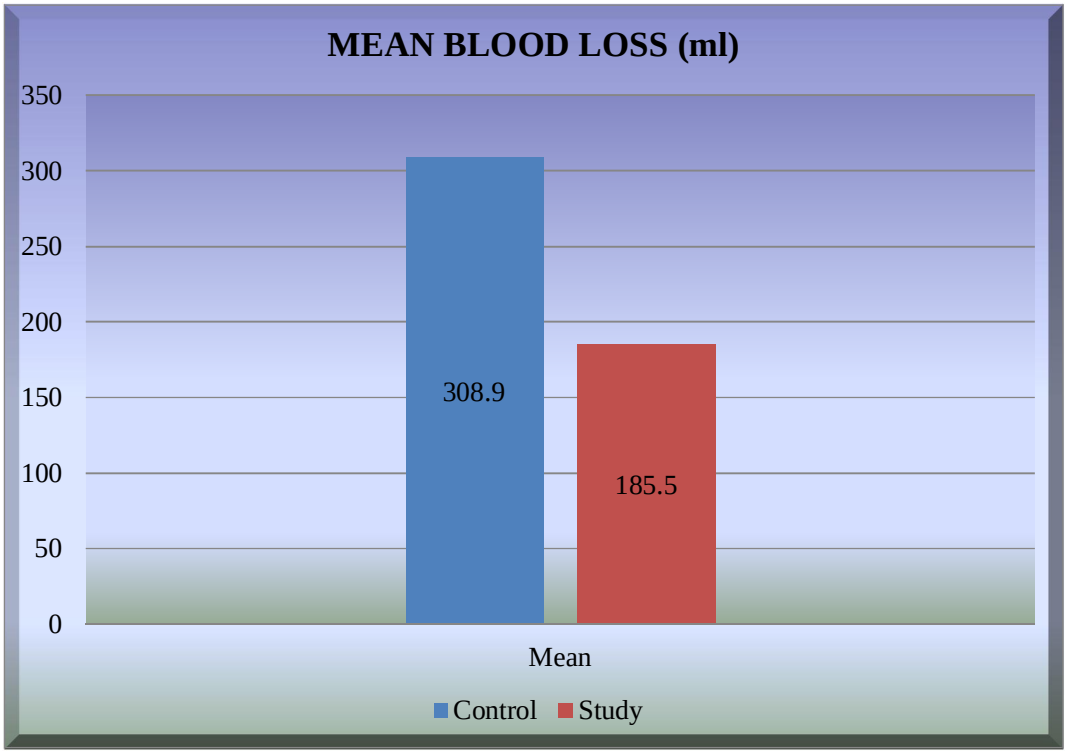


Table – 10

BIRTH WEIGHT

GROUP	BIRTH WEIGHT (in kg)			
	No	Mean	S.D	S.E of Mean
Control	200	2.84	0.387	0.027
Study	200	2.87	0.388	0.027
P Value	0.414			

S.D-Standard Deviation, S.E-Standard Error.

Birth weight of the baby was calculated using standard weighing machine.

Average birth weight in control group was 2.84 kg and in study group was 2.87 kg. Standard deviation and P value were calculated using t test. P Value was 0.414 which is not significant.

BIRTH WEIGHT (Kg)

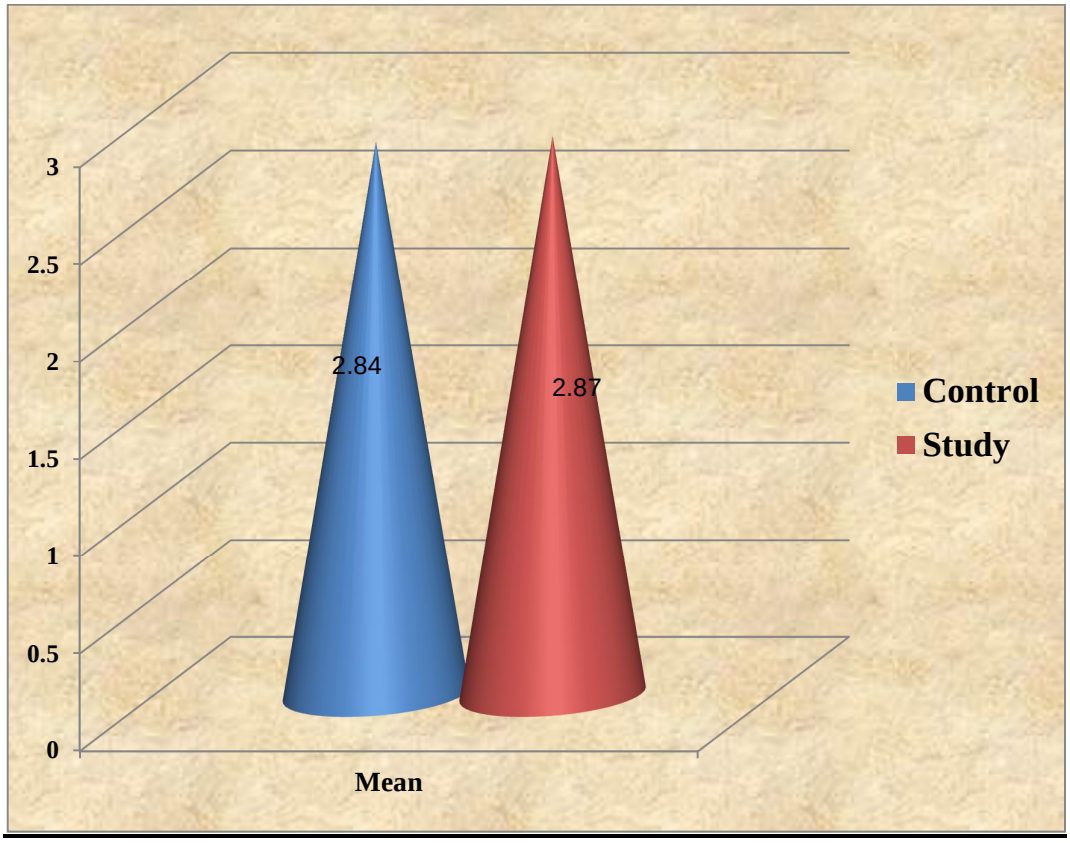


TABLE – 11

OCCURRENCE OF POSTPARTUM HAEMORRHAGE (PPH)

OCCURRENCE OF PPH	CONTROL		STUDY	
	No	%	No	%
Yes	17	8.5	4	2
No	183	91.5	196	98
Total	200	100	200	100
P Value	0.004			

8.5% of control group & 2% of study group had blood loss ≥ 500 ml. None of both groups had more than 1000 ml of blood loss.

P value was calculated using Pearson chi-square test. P value was 0.004. Hence the difference between control and study group is significant.

OCCURRENCE OF POSTPARTUM HAEMORRHAGE (PPH)

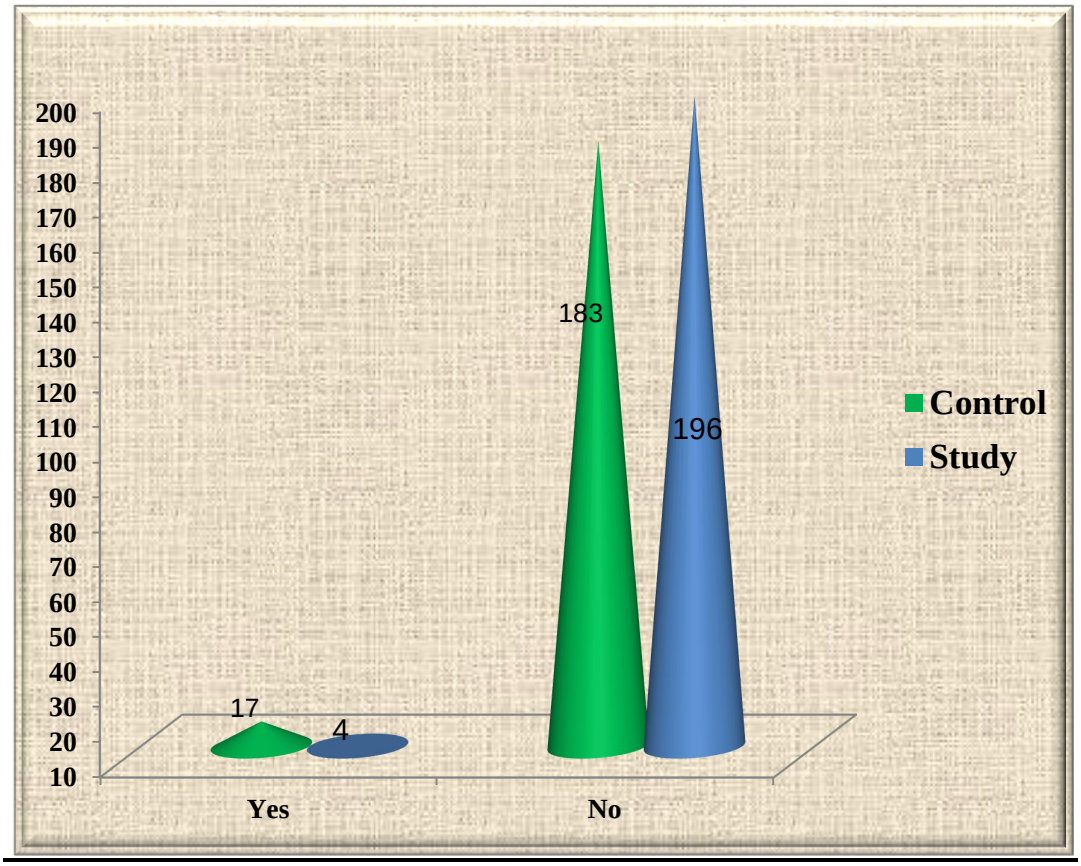


TABLE 12

NEED FOR BLOOD TRANSFUSION

NEED FOR BLOOD TRANSFUSION	CONTROL		STUDY	
	NO	%	NO	%
Yes	15	7.5	4	2
No	185	92.5	196	95.3
Total	200	100	200	100
P Value	0.010			

7.5% in control group & 2% in study group needed blood transfusion.

P Value was calculated using Pearson Chi-square test, which was 0.010 , that is significant.

TABLE – 13

HAEMOGLOBIN (Hb%) DIFFERENCE BEFORE AND AFTER DELIVERY

Hb% DIFFERENCE (in gms)	CONTROL	STUDY
Mean	0.68	0.28
S.D	0.3	0.15
S.E of Mean	0.02	0.011
P Value	< 0.001**	

** → highly significant

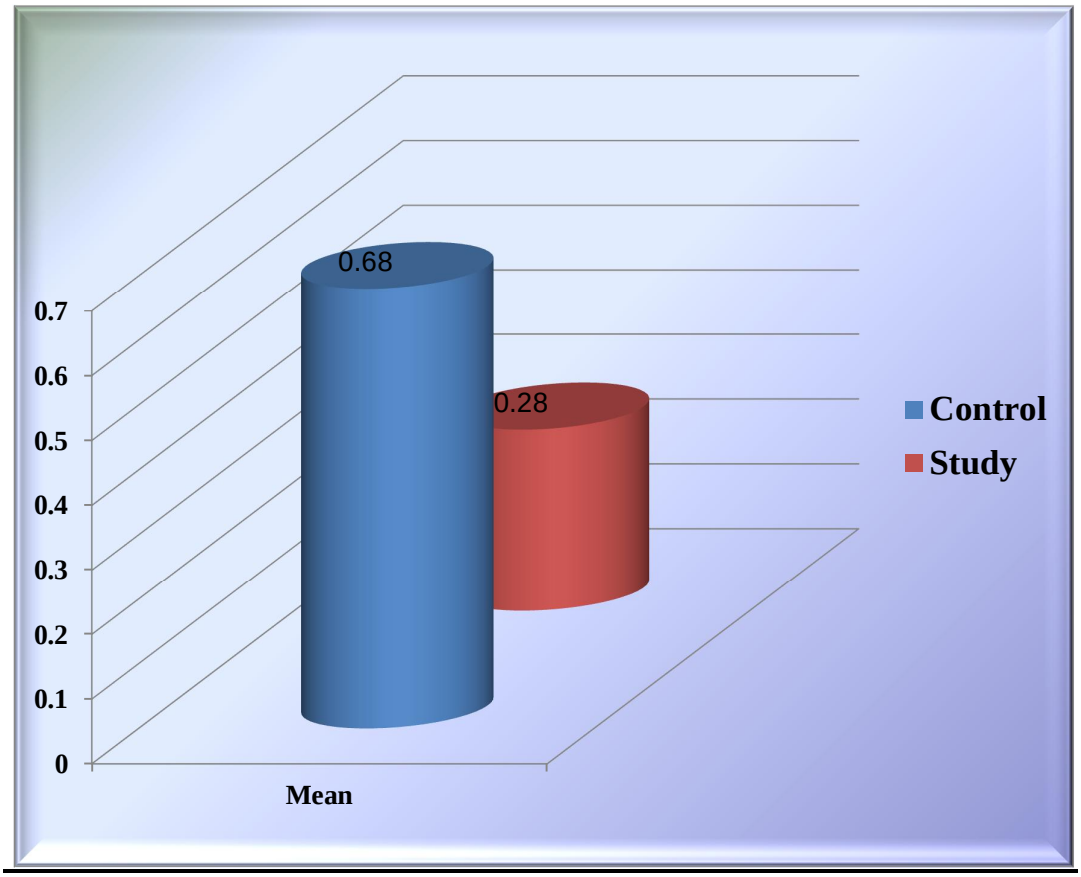
S.D → Standard Deviation

S.E → Standard Error

Haemoglobin % was estimated in all cases antenataly and repeat Hb% was seen in all cases 48 hrs after delivery. Haemoglobin difference before and after delivery was calculated in both control and study groups. The mean difference in Hb% in control group was 0.68. In study group it was 0.28.

P Value was calculated using t test. P value was < 0.001 and it is highly significant.

HAEMOGLOBIN (Hb%) DIFFERENCE BEFORE AND AFTER DELIVERY



DISCUSSION

Even with in very few minutes, normal progression of labour can become abnormal or a successful delivery can turn into a disaster if post partum haemorrhage occurs.

Hence appropriate management of third stage of labour and prompt recognition of its complications should be done or otherwise it may end up in maternal death.

This study was conducted at R.S.R.M lying in Hospital, Stanley Medical College, Chennai to study the efficacy of Placental Cord Blood drainage versus none as a part of management of third stage of labour after vaginal delivery.

In this study placental cord blood was drained by unclamping the previously clamped and cut cord in 200 vaginal deliveries and in another 200 vaginal deliveries, the cord was remain clamped and it was not drained.

Discussion of profile of studied cases

Age Group:

In our study, pregnant women between 18 – 35 yrs were included in the study .Majority of pregnant women belonged to the age group of 21 – 25 yrs.

Around 88% of control group & 87% of study group of women were between 21 – 30 yrs. Mean age in control group is 23.4 yrs, & in study group is 24.18. Both groups (Control and study) are comparable regarding the age group. 'P' Value calculated & it is also not significant.

In a similar randomized controlled trail of placental cord blood drainage conducted in Department of Obstetrics and Gynaecology at J.N. Medical College, Belgaum, 2007 for the prevention of post partum haemorrhage, mean age of both groups were between 23-24 yrs.

In another similar study, conducted by Melal Mohammed, at Babylon University, 2010, mean age of both groups,varied between 26-27yrs.

Antenatal Care:

Those women,who had atleast 5 antenatal visits,not only in our hospital but also outside were considered as booked cases. In our study, the proportion of antenatal mothers who were booked was greater than those who did not, in both groups. 96% of control group and 97% of study group were booked, and there was no significant difference between control and study groups in terms of antenatal care.

Obstetric formula:

In our study there were more primigravida in both control and study groups, when compared with multi gravida. Multi gravida – upto third gravida were included.

In the control group

-Around 52% were primigravida and 48% were multi gravida

In the study group:

- Around 61% were primigravida and 39% were multi gravida.

Hence parity was comparable in both control and study groups.

In a similar study, by Shravage et al, both groups were comparable in terms of gravidity & parity.

Period of gestation:

In our study pregnant women between 37 to 40 completed weeks were included in the study. Preterm labour was excluded from the study.

All were singleton, viable pregnancies.

The mean gestational age was 38.2 weeks in control group and 38.3 weeks in study group. Hence it was comparable in both groups.

In a similar randomized controlled trial by Shravage JC and Silpa, (Journal of Obstetrics and Gynaecology of India, Article, 2007) mean gestational age was 38.7 weeks in study group and 38.5 weeks in control group.

In another study by Sharma et al, mean age group varied between 38.5-38.7 in both groups.

Quantitative Parameters:

In our study, in terms of height, weight and body mass index, both control and study groups were comparable.

Those with blood pressure ≥ 140/90 mm of Hg were excluded.

Routine urine and blood examination was normal in both control and study groups. Previous studies also showed the same result.

Augmentation of Labour:

400 pregnant women with spontaneous onset of labour were included for the study. Induction of labour either by cerviprime gel, (or) stripping was excluded from the study.

Progress of labour was monitored using partogram. Labour was augmented with oxytocin in active phase of labour. Majority of women in both control and study groups were augmented with oxytocin.

In our study, around 91% in control group and 92% in study group were augmented with oxytocin and both groups were comparable in terms of oxytocin acceleration.

In a similar study by Hora Soltani 2011,both groups were comparable in terms of augmentation of labour.

In another study by MelalMohammed at Babylon, augmentation with oxytocin was comparable in both groups.

Duration of Labour: (I and II Stage)

As prolonged labour precipitates post partum haemorrhage, duration of first and second stages was compared in both groups. Duration of first

stage, calculated from onset of true labour pains up to full dilatation of cervix.

Mean duration of first stage was 8.13 hrs in control group and 8.17 hrs in study group, which was comparable and the 'P' Value was not significant.

Second stage of labour calculated from full dilatation of cervix up to delivery of foetus. Mean duration of second stage was 26.60 minutes in control group and 25.69 minutes in study group which was also comparable and the P Value was not significant.

In a similar study by Shravage JC in 200 pregnant women , mean duration of I stage of labour in control group was 9.6 hrs & in study group was 10.17 hrs, II stage of labour in control group was 22.05 mnts & in study group was 24.15 mnts. Both stages (I & II) were comparable between 2 groups.

Mode of Delivery:

As labour natural with episiotomy may augment the blood loss during third stage of labour both control and study groups were compared in terms of mode of delivery. Major proportion of women in both control

and study groups were given mediolateral episiotomy after crowning of head.

Around 92% of women in control group and 89% of study group were delivered by labour natural with episiotomy, around 9% of control group and 8% of study group were delivered by labour natural . 4% of control and 3.5% of study group were delivered by labour natural with perineal laceration.

In a similar study by Soltani 2011, mode of delivery was comparable.

Birth weight:

Birth weight between 2 – 4 kg were taken for the study. Mean birth weight was 2.84 kg in control group and 2.87 kg in study group & hence it was comparable. P Value was not significant.

This was similar to a study done by Sharma et al 2008. The mean birth weight was 2.9 kg in study and 2.8 kg in control group.

OUTCOME PARAMETERS:

Duration of III stage of labour:

In our study the duration of III stage of labour from the delivery of the baby up to the delivery and expulsion of placenta with its entire membranes was calculated using stop watch .

The mean duration of IIIrd stage of labour was 5.06 minutes (303.6 seconds) in control group and in study group it was 3.5 minutes (214 seconds) and the difference was 1.5 minutes & the result was statistically highly significant (P value is <0.001).

Several studies had similar reports. Gulati et al showed that, in a study of 200 pregnant women, mean duration was 2.9 minutes in study group and 5.72 minutes in control group.

In a similar study conducted by Soltan H, Poulose TA, Hutchon DR, 2011, published in Cochrane review, in 1257 women, cord blood drainage reduced the duration of third stage by a mean of 3 minutes,and the same was shown in French cochrane review, 2012. In another Cochrane review 2009, study conducted by Hora Sotani, Fiona Dickinson, Ian M Symonds, the mean difference was 5.4 minutes.

In another study by Melal at Babylon University, 2010, mean duration was 5.3 mnts in study group & 8.9 mnts in control group.

In a study at Bangkok, Thailand, 2009, mean duration was 5 minutes in study group and 7 minutes in control group.

In another study conducted by Sharavage, J.N. Medical College, Belguam mean duration of third stage of labour in study group was 5 minutes and in control group was 7.4 minutes.

In a study by Giaclaone et al 2000, involving 500 patients, the mean value in control group was 15 minutes and 8 minutes in study group.

Blood Loss during third stage:

In our study, cord blood was drained and collected in a separate clean kidney tray and the blood loss during third stage was measured using a calibrated blood collection drape. Great effect was taken to measure the blood loss accurately and separate mops were used for episiotomy wound suturing. But the limitation of our study is some amount of inclusion of amnion fluid and omission of some amount of blood, spattered on to the gowns (or) delivery table. This could affect the blood loss measurement. However the likely error would be random and reduce the power, but not bias the result of the study.

Another major confounding factor in such studies could be the variation in the use of oxytocic drugs both in relation to the time of administration and the type of drug used. It could have a significant effect on the duration of 3rd stage of labour. But it was avoided in our study by giving injection oxytocin 10 units intramuscularly within 1 minute of delivery of foetus as part of active management of third stage of labour, in all cases. Similarly the timing of umbilical cord clamping may confound the result. In our study, fortunately in all cases both in control and study groups, the umbilical cord was clamped immediately or within 30 seconds after delivery.

In our study, mean blood loss was 308 ml in control group and 185ml in study group.Hence cord blood drainage reduced the blood loss by 123 ml.

'P' Value was < 0.001 which is highly significant.

In a similar study conducted by Soltani H, Poulose TA, Hutchon DR, 2011& French Cochrane review 2012 cord blood drainage reduced the blood loss during third stage by average of 77 ml.

In another study by Melal, 2010, it was 184 ml in study group & 249 ml in control group.

Shravage et al showed that average blood loss was 252 ml in control and 175 ml in study group.

Gulati et al reported that the amount of blood loss was 247 ml in control group and 193 ml in study group.

Post Partum Haemorrhage and Need for Blood transfusion

As per the standard definition of postpartum haemorrhage, it was calculated that any blood loss of equal to or more than 500 ml was considered as postpartum Haemorrhage .In our study 8.5% in control group and 2% in study group had blood loss more than 500 ml. None of both groups had blood loss > 1000 ml. Among the control group 7.5% & 2% of study group needed blood transfusion .Repeat blood transfusion was planned if repeat Hb% was < 8gms / dl. None of the cases either in control or in study group needed more than 2 blood transfusions. Only two patients in the control group needed two blood transfusions.

In those patients who had postpartum haemorrhage, it was managed with general measures & medical management (40 units of oxytocin added in saline drip / inj. Carboprost (15 –methyl $PGF_2\alpha$) one ampoule i.m / inj. Methergine 2 ampoules i.v/ rectal misoprostol 800 µg kept rectally) and blood transfusion.

2 Cases in the study group and 10 cases in the control group were given inj. Carboprost (15 – methyl $PGF_{2\alpha}$) l ampoule i.m and rectal misoprostol 800 µg kept in addition to oxytocin. None of the cases either in control or in the study group needed surgical management of PPH.

In our study the incidence of post partum Haemorrhage in the control was 8.5% and in the study group it was 2%. P Value was 0.004 which is significant.

In a similar study by sharavage et al, J.N. Medical College, Belgaum the incidence was 3% in the study and 10% in the control groups.

Gulati et al studied 200 women and reported that incidence of PPH was 6% in study group and 12% in the control group

In a study by Soltani, 2011, there was no significant difference noted between both groups, regarding the rate of PPH/Blood transfusion.

In another study involving 200 women, by Melal Mohammed, 2010, none of the study group had PPH/ needed blood transfusion & only one in control group had PPH and needed blood transfusion..

Hb% difference between antenatal and post natal period

Routine Hb% measurement was done in all cases of study and control group. Repeat hemoglobin (Hb %) was done 48 hours after delivery. Difference between antenatal and post natal values were calculated in both study and control groups.

Mean difference in control group was 0.68 gms and in the study group was 0.28 gms. The difference between the control and study group was statistically highly significant as shown by the P Value which is < 0.001.

In a similar study by Melal Mohammed 2010 in 200 women and another study by Giaclone in 200 women , the difference in Hb% (before & 2 days postnatal) was more in control group than in study group & the result was significant.

SUMMARY

Placental cord blood drainage after vaginal delivery as a part of management of third stage of labour is a randomized clinical controlled trail on 400 pregnant women admitted to the labour ward at R.S.R.M. lying in Hospital, Stanley Medical College between Jan 2013 – Dec 2013. Those who met the inclusion criteria were selected for the study.

They were allocated in two groups as 200 pregnant women in one group as control and 200 another pregnant women in study group.

In both groups, detailed general &obstetric examinations were done. Progression of labour was monitored carefully. Duration of all stages of labour (I, II, and III) noted in all cases.

In the study group after delivery of the foetus, previously clamped and cut umbilical cord was unclamped immediately and the placental blood was drained in a separate kidney tray, while the umbilical cord remained clamped in the control group. Inj. Oxytocin 10 units i.m given as a part of active management of third stage of labour in all cases within 1 minute after delivery.

Amount of blood loss during 3rd stage, occurrence of postpartum haemorrhage, need for blood transfusion and Hb% difference were noted in both groups.

The results were tabulated and summarized as follows:-

1. Majority of cases in both groups were between 21 to 30 yrs.
2. Major proportion of cases (96 – 97%) were booked and immunized in both groups.
3. 50% of control group and 60% of study group were constituted by primigravida and the rest were multigravida (up to G_3).
4. The mean gestational age in both control and study groups were similar & it was around 38 weeks.
5. Height, weight and body mass index were comparable in both study and control groups.
6. Around 90% in both control and study groups, augmentation with oxytocin drip during active phase of labour was done.
7. Duration of first and second stages were comparable in both study and control groups.
8. Mode of delivery (either labour natural with episiotomy / labour natural with LP/labour natural) was also comparable between study and control groups.

9. Mean birth weight of babies were comparable in both groups it was around 2.9kg in study group and 2.8 kg in control group.
10. Mean duration of III stage of labour was 5.06 minutes in control group and 3.5 minutes in study group and the difference is highly significant statistically.
11. Mean blood loss during III stage of labour was 308 ml in control and185 ml in study group and the difference is highly significant.
12. Incidence of Post Partum Haemorrhage was 8.5% in control group and 2% in study group and none of the cases required surgical management of PPH.
13. 7.5% of cases in control group and 2% of study group needed blood transfusion after delivery.
14. Analysing the Hb% difference between antenatal and postnatal period (Repeat Hb% 2 days after delivery) in both groups, it was 0.68 in control group and 0.28 in study group which was highly significant.

CONCLUSION

1. Placental cord blood drainage reduces the duration of third stage of labour.
2. It reduces the blood loss during third stage of labour.
3. Incidence of Post Partum Haemorrhage is reduced in cord blood drainage group and the need for blood transfusion after delivery is also decreased in placental blood drainage group.
4. The decrease in Hb% after delivery is less with the placental blood drainage group.
5. Placental blood drainage does not need any extra cost, equipment (or) effort and it is a simple, non invasive safe method that can be practiced even by midwives in rural settings as a part of management of third stage of labour in reducing the blood loss during third stage.

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ABBREVIATIONS

PPH-Postpartum Haemorrhage.

LN with LP – Labour natural with perineal laceration

AMTSL - Active management of Third stage of labour

BJOG - British Journal of Obstetrics & Gynaecology

RCOG - Royal College of Obstetrics & Gynaecology

O & G - Obstetrics & Gynaecology

WHO - World Health Organisation

FIGO - International Federation of Obstetrics & Gynaecology

B.P. - Blood Pressure

P.R. - Pulse Rate

PGE - Prostaglandin E

$PGF_2\alpha$ – Prostaglandin $F_2\alpha$

i.m. - Intramuscular

inj - injection

i.v. - Intravenously

Hb - Haemoglobin

gms - Grams

G_3P_2 L_2- Gravida $_3$ $Para_2$ $Live_2$

yrs - years

mnts- Minutes.

Hrs-Hours

RL/ NS – Ringer lactate / Normal saline

BMI-Body Mass Index.

ECG-Electro cardio gram.

E.F.Wt-Estimated Foetal Weight.

S.D-Standard Deviation.

S.E-Standard Error.

INSTITUTIONAL ETHICAL COMMITTEE,
STANLEY MEDICAL COLLEGE, CHENNAI-1

Title of the Work : Placentral cord blood drainage after vaginal delivery A part of the management of third stage of labour

Principal Investigator : Dr.S.A.Meena

Designation : PG in MS(OG)

Department : Department of OG
Government Stanley Medical College,
Chennai-1

The request for an approval from the Institutional Ethical Committee (IEC) was considered on the IEC meeting held on 13.06.2013 at the Council Hall, Stanley Medical College, Chennai-1 at 2PM

The members of the Committee, the secretary and the Chairman are pleased to approve the proposed work mentioned above, submitted by the principal investigator.

The Principal investigator and their team are directed to adhere to the guidelines given below:

1. You should inform the IEC in case of changes in study procedure, site investigator investigation or guide or any other changes.
2. You should not deviate from the area of the work for which you applied for ethical clearance.
3. You should inform the IEC immediately, in case of any adverse events or serious adverse reaction.
4. You should abide to the rules and regulation of the institution(s).
5. You should complete the work within the specified period and if any extension of time is required, you should apply for permission again and do the work.
6. You should submit the summary of the work to the ethical committee on completion of the work.

MEMBER SECRETARY, 9/12/13
IEC, SMC, CHENNAI

CONSENT FORM

STUDY TITLE : PLACENTAL CORD BLOOD DRAINAGE AFTER VAGINAL DELIVERY AS PART OF THE MANAGEMENT OF THIRD STAGE OF LABOUR

STUDY CENTRE : R.S.R.M. Lying in Hospital, Stanley Medical College, Chennai.

PARTICIPANT NAME : **AGE:** **SEX**: **J.D.NO.**

I confirm that I have understood the purpose of procedure for the above study, I have the opportunity to ask the question and all my questions and doubts have been answered to my satisfaction.

I understand that the investigator, regulatory authorities and the ethics committee will not need my permission to look at my health records both in respect to the current study and any further research that may be conducted in relation to it, even if I withdraw from the study. I understand that my identity will not be revealed in any information released to third parties of published, unless as required under the law. I agree not to restrict the use of any results that arise from the study.

I hereby consent to participate in this study of **:** "PLACENTAL CORD BLOOD DRAINAGE AFTER VAGINAL DELIVERY AS PART OF THE MANAGEMENT OF THIRD STAGE OF LABOUR"

Place : Signature of Investigator:

Date : Study Investigators Name

Institution : Signature / Thumb Impression of patient

PROFORMA

Name Age I.P.No:

LMP :

EDD :

G.Age:

D.O.A :

D.O.D :

OBSTETRIC FORMULA :

COMPLAINTS :

MENSTRUAL HISTORY :

MARITAL HISTORY :

OBSTETRIC HISTORY :

PREVIOUS

S.No.	Mode of Delivery	Birth Wt	LCB	Place

PRESENT: Booked/Un Booked
Immunized
Complications

PAST HISTORY:
H/o Bleeding disorder / HT / DM / TB / Epilepsy

PERSONAL HISTORY:

FAMILY HISTORY:

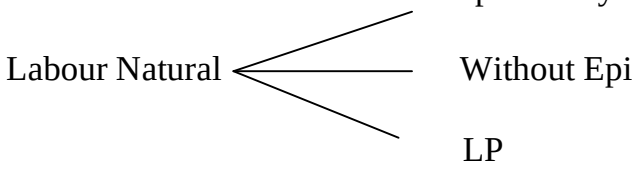
GENERAL EXAMINATION:

Tem:	Ht:
Pallor:	Wt:
Pedal edema:	Breast:
P.R:	
B.P:	
C.V.S:	
R.S:	

PER ABDOMINAL EXAMINATION:

PER VAGINAL EXAMINATION:

MODE OF DELIVERY:



TIME OF ADMISSION IN LABOUR WARD	DURATION OF STAGES OF LABOUR		
	I (in Hours)	II (in Mnts)	III (in Sec)

OXYTOCIN ACCELERATION	BLOOD LOSS DURING 3RD STAGE (in ml)	OCCURENACE OF PPH	NEED FOR BLOOD TRANSFUSION

Baby: Term/Preterm

Birth weight

Rpt Hb: (48 hours postnatal)

INVESTIGATIONS:

Urine:	Hb%	Blood Sugar
Albumin	PCV	HIV
Sugar	Platelet Count	VDRL
Deposits	BT	
	CT	
	Blood group & Type	

ULTRASONOGRAM:

REMARKS:

MASTER CHART

S.No	NAME	CONTROL / STUDY	AGE	IP.No	Booked / Un Booked	PARITY	HEIGHT (mt)	WEIGHT (kg)	BMI	G.Age (weeks)	Oxytocin Accleration	DURATION OF LABOUR			Mode OF Delivery	Blood Loss During III Stage (ml)	Need for Blood Transfusion	Occurence Of PPH	Birth Weight (kg)	HB % (gms)	
												I Stage (Mnts)	II Stage (Mnts)	III Stage (seconds)						AN	PN
1	Durgadevi	S	21	13780	B	Primi	1.53	62	26.49	38.4	YES	690	35	140	LN with Epi	130	NO	NO	3.50	11.0	10.8
2	Kalpana	C	26	13686	B	Primi	1.52	60	25.97	38.1	YES	600	45	420	LN with Epi	120	NO	NO	2.70	10.2	9.4
3	Narmadha	S	25	13780	B	G2P1L1	1.47	60	27.77	38.4	YES	300	30	130	LN with Epi	210	NO	NO	2.80	10.4	10.2
4	Priya	C	27	13245	B	G3P2L2	1.51	49	21.49	38.2	YES	330	25	300	LN with Epi	250	NO	NO	2.25	9.6	9.0
5	Sindhu	S	20	13724	B	Primi	1.58	50	20.03	37.4	YES	570	25	360	LN with Epi	150	NO	NO	3.00	9.8	9.6
6	Devi	C	20	13200	B	Primi	1.51	59	25.88	38.8	YES	445	32	320	LN with Epi	280	NO	NO	2.90	9.8	9.0
7	Gayathri	S	22	13734	B	Primi	1.47	48	22.21	38.6	YES	565	30	220	LN with Epi	220	NO	NO	3.20	9.8	9.6
8	Jamuna Devi	C	22	16541	B	Primi	1.59	64	25.32	38.6	YES	640	25	340	LN	270	NO	NO	3.20	10.9	10.2
9	Sakila Banu	S	23	13278	B	G2P1L1	1.55	59	24.56	38.1	YES	335	15	240	LN with Epi	160	NO	NO	2.10	9.8	9.6
10	Nandhini	C	21	12895	B	G2P1L1	1.53	56	23.92	37.6	YES	290	25	290	LN with Epi	130	NO	NO	2.80	9.8	9.2
11	Petchaimmal	S	26	13313	B	G2P1L1	1.58	65	26.04	38.5	YES	355	12	180	LN with Epi	80	NO	NO	2.10	10.8	10.6
12	Malathi	C	22	126020	B	G2P1L1	1.52	65	28.13	38.6	YES	340	15	280	LN with Epi	280	NO	NO	2.20	10.2	9.4
13	Ambika	S	24	13472	B	G2P1L1	1.45	50	23.78	38.2	NO	280	12	180	LN with Epi	75	NO	NO	3.20	9.8	9.4
14	Aswini	C	22	13718	B	G2P1L1	1.52	50	21.64	38.3	YES	345	20	380	LN with Epi	240	NO	NO	2.40	9.8	9.0
15	Swetha	S	20	13039	B	G2P1L1	1.55	42	17.48	38.2	YES	295	15	240	LN with Epi	230	NO	NO	2.50	9.8	9.6
16	Praveena	C	24	11366	B	Primi	1.48	55	25.11	38.6	NO	650	35	480	LN with Epi	280	NO	NO	3.10	10.4	9.8
17	Bharathi	S	28	13540	B	G2P1L1	1.53	57	24.35	38.1	YES	350	20	260	LN	150	NO	NO	2.50	10.2	10.0
18	Sasikala	C	22	13041	B	G2P1L1	1.52	68	29.43	37.6	YES	340	24	440	LN with Epi	270	NO	NO	2.70	10.0	9.2
19	Usha	S	20	13244	B	Primi	1.70	64	22.15	38.4	YES	585	34	300	LN with Epi	205	NO	NO	2.40	9.8	9.4
20	Anish Fathima	C	22	11330	B	Primi	1.58	60	24.03	38.2	YES	520	45	480	LN with Epi	220	NO	NO	3.30	10.1	9.2
21	Sangeetha	S	20	13225	B	G2P1L1	1.52	64	27.70	37.4	YES	280	16	120	LN with Epi	145	NO	NO	2.70	9.8	9.5
22	Vedhavalli	C	23	12465	B	G2P1L1	1.55	54	22.48	38.2	YES	300	18	240	LN with Epi	100	NO	NO	2.40	10.3	9.4
23	Anusha	S	24	13250	B	G2P1L1	1.53	62	26.49	38.4	YES	280	17	240	LN with Epi	210	NO	NO	2.70	9.8	9.6
24	Lakshmui	C	24	12032	B	G2P1L1	1.53	50	21.36	37.6	YES	320	25	320	LN with Epi	290	NO	NO	2.70	10.2	9.6
25	Gayathri	S	21	13264	B	Primi	1.60	60	23.44	38.3	YES	645	27	120	LN with Epi	150	NO	NO	2.50	10.8	10.6
26	Kalpana	C	21	11754	B	Primi	1.65	63	23.14	38.6	YES	620	45	260	LN with Epi	280	NO	NO	2.50	10.4	9.8
27	Bakyalakshmi	S	27	12491	B	G3P2L2	1.54	59	24.88	38.2	YES	280	23	280	LN with Epi	220	NO	NO	3.00	10.2	10.0
28	Nsreen Bnu	C	23	11884	B	G2P1L1	1.54	60	25.30	37.2	YES	360	15	220	LN with Epi	140	NO	NO	3.10	9.8	9.6
29	Gulsam	S	22	13166	B	G2P1L1	1.55	59	24.56	38.5	YES	240	18	240	LN with Epi	170	NO	NO	3.70	9.8	9.2
30	kala	C	32	13733	B	G3P2L2	1.60	65	25.39	38.1	YES	455	20	340	LN with Epi	270	NO	NO	2.70	9.8	9.2
31	Aruna	S	25	12187	B	G2P1L1	1.50	70	31.11	38.4	YES	325	16	80	LN with Epi	120	NO	NO	2.60	9.8	9.6
32	Lakshmi	C	21	13323	B	G2P1L1	1.44	48	23.15	38.1	YES	360	22	300	LN	285	NO	NO	3.80	9.8	9.4
33	Amala	S	27	11480	B	Primi	1.55	63	26.22	38.4	YES	580	25	120	LN with Epi	75	NO	NO	3.10	10.0	9.8
34	Latha	C	24	11701	B	Primi	1.64	62	23.05	38.8	YES	640	54	140	LN with Epi	290	NO	NO	2.60	10.2	9.8
35	Renuka	S	26	11423	B	G2P1L1	1.60	65	25.39	38.4	YES	330	24	380	LN with Epi	210	NO	NO	2.50	10.2	10.0
36	Nalini	C	27	13273	B	G2P1L1	1.60	66	25.78	38.6	YES	345	25	300	LN with Epi	270	NO	NO	3.00	10.0	9.4
37	Suganthi	S	22	11803	B	G2P1L1	1.53	64	27.34	38.5	YES	260	16	220	LN with Epi	130	NO	NO	2.90	9.8	9.5

38	Devika	C	28	11818	B	G3P2L2	1.50	56	24.89	38.8	YES	240	18	260	LN with Epi	160	NO	NO	2.60	10.8	9.2
39	Kalpana	S	35	11787	UB	G3P2L2	1.56	67	27.53	38.3	NO	340	20	360	LN with Epi	220	NO	NO	3.10	10.2	9.8
40	Revathi	C	22	11781	B	G2P1L1	1.57	65	26.37	39.0	YES	325	22	280	LN with Epi	265	NO	NO	2.70	9.8	9.2
41	Saroja devi	S	27	11726	B	G2P1L1	1.47	59	27.30	37.4	YES	360	30	300	LN with Epi	140	NO	NO	3.30	10.0	9.7
42	Punitha	C	24	11415	B	G2P1L1	1.61	53	20.45	38.3	YES	340	24	340	LN with Epi	275	NO	NO	2.90	9.6	9.0
43	Saranya	S	25	11664	B	Primi	1.54	64	26.99	38.4	YES	650	43	220	LN with Epi	215	NO	NO	3.30	10.2	10.0
44	Pravena	C	20	11659	B	Primi	1.50	53	23.56	39.1	YES	660	34	320	LN with Epi	280	NO	NO	2.90	10.1	9.4
45	Kalpana	S	25	11700	B	G2P1L1	1.55	60	24.97	38.4	YES	340	15	260	LN with Epi	150	NO	NO	2.90	9.8	9.6
46	Sakila	C	29	11628	B	G2P1L1	1.56	67	27.53	38.2	YES	325	16	240	LN with LP	290	NO	NO	2.50	10.2	9.8
47	Merlin	S	25	11645	B	G2P1L1	1.58	58	23.23	38.4	YES	310	12	120	LN with Epi	65	NO	NO	3.10	10.4	10.2
48	Danadhi	C	21	12031	B	G2P1L1	1.60	82	32.03	37.6	YES	360	25	320	LN with Epi	280	NO	NO	2.90	9.8	9.2
49	Amaravathi	S	24	11468	B	Primi	1.56	57	23.42	38.6	YES	620	32	160	LN with Epi	170	NO	NO	3.10	10.2	10.0
50	Meena	C	20	11650	B	Primi	1.46	60	28.15	38.4	YES	670	52	310	LN with Epi	380	NO	NO	3.10	9.8	9.2
51	Sumathi	S	24	11654	B	G2P1L1	1.52	52	22.51	38.1	YES	350	20	130	LN with Epi	160	NO	NO	2.50	10.4	10.0
52	Dhanalakshmi	C	20	11854	B	G2P1L1	1.54	54	22.77	37.6	YES	320	15	170	LN with Epi	170	NO	NO	3.10	10.6	10.0
53	Padmini	S	21	11528	B	Primi	1.55	60	24.97	38.0	YES	645	25	280	LN with Epi	150	NO	NO	2.90	11.0	10.8
54	Kavitha	C	21	11491	UB	Primi	1.53	53	22.64	38.0	YES	640	20	340	LN with Epi	60	NO	NO	3.10	12.0	11.6
55	Rani	S	25	11860	B	G2P1L1	1.48	52	23.74	38.2	YES	345	22	240	LN with Epi	210	NO	NO	2.30	10.4	10.2
56	Narmadha	C	21	11922	B	G2P1L1	1.47	58	26.84	37.6	NO	350	18	180	LN with Epi	275	NO	NO	2.60	10.2	9.8
57	Sivanthika	S	24	11488	B	Primi	1.52	62	26.84	37.4	YES	620	30	240	LN with Epi	220	NO	NO	3.10	9.8	9.5
58	Shakira	C	18	10884	B	Primi	1.51	60	26.31	37.6	YES	630	28	170	LN with Epi	280	NO	NO	3.70	10.2	9.4
59	Eswari	S	23	11600	B	G2P1L1	1.53	52	22.21	38.4	YES	345	15	120	LN with Epi	140	NO	NO	3.30	10.4	10.0
60	Rahima	C	35	13269	B	G2P1L1	1.58	60	24.03	38.2	YES	360	28	320	LN with Epi	275	NO	NO	2.20	10.2	9.6
61	Premila	S	24	13646	B	Primi	1.60	58	22.66	37.4	YES	580	30	220	LN with Epi	120	NO	NO	3.20	9.8	9.5
62	Minalgodi	C	26	11640	B	Primi	1.52	48	20.78	38.4	YES	590	35	340	LN with Epi	170	NO	NO	2.80	9.6	9.0
63	Maheswari	S	24	11604	B	G2P1L1	1.51	50	21.93	39.4	YES	280	12	120	LN with Epi	85	NO	NO	3.30	10.2	10.0
64	Mary	C	31	13580	B	G3P2L2	1.52	55	23.81	39.1	YES	355	24	360	LN with Epi	290	NO	NO	2.70	10.4	9.4
65	Venilla	S	24	13756	B	G2P1L1	1.53	53	22.64	38.1	NO	325	17	210	LN with Epi	110	NO	NO	2.60	9.8	9.5
66	Poongodi	C	23	11578	B	Primi	1.53	63	26.91	39.1	YES	560	25	140	LN with Epi	110	NO	NO	2.80	10.2	9.8
67	ManoRanjini	C	21	14634	B	Primi	1.54	63	26.56	38.2	YES	640	45	420	LN with Epi	400	NO	NO	3.60	9.8	9.1
68	Nathiya	S	26	11580	B	Primi	1.52	50	21.64	38.4	YES	540	20	120	LN with Epi	80	NO	NO	3.30	9.8	9.5
69	Gayathri	C	22	14652	B	Primi	1.48	61	27.85	38.5	NO	560	25	280	LN with Epi	180	NO	NO	2.90	10.2	9.8
70	Meena	S	24	11650	B	Primi	1.52	60	25.97	38.6	YES	610	15	350	LN with Epi	120	NO	NO	3.00	10.4	10.1
71	Malliga	C	23	14773	B	G2P1L1	1.59	51	20.17	37.4	YES	360	24	300	LN with Epi	320	NO	NO	3.10	10.2	9.4
72	Shakila	S	21	11628	B	Primi	1.60	65	25.39	38.5	YES	580	25	240	LN with Epi	250	NO	NO	3.30	10.2	9.8
73	Nagavalli	C	26	14651	B	G2P1L1	1.48	49	22.37	37.3	YES	340	30	320	LN with Epi	340	NO	NO	3.30	10.6	9.8
74	Devi	S	19	14662	B	Primi	1.54	57	24.03	37.4	YES	610	15	180	LN with Epi	180	NO	NO	2.90	10.4	10.0
75	Ilakia	C	21	14776	B	Primi	1.56	60	24.65	38.6	YES	620	20	280	LN	190	NO	NO	2.10	10.2	9.2
76	Shamshath	S	28	14065	B	Primi	1.53	66	28.19	38.4	YES	680	25	160	LN with Epi	210	NO	NO	2.30	10.2	9.8
77	Jansi Rani	C	21	14804	B	G2P1L1	1.59	66	26.11	38.5	YES	345	28	300	LN with Epi	360	NO	NO	2.10	9.8	9.1

78	Chandra Kala	S	25	14120	B	G2P1L1	1.53	51	21.79	38.5	YES	350	24	260	LN	140	NO	NO	2.50	10.4	10.1
79	Usha Mary	C	22	14901	B	Primi	1.46	51	23.93	37.4	YES	670	35	360	LN with Epi	380	NO	NO	3.30	10.6	9.4
80	Mekala	S	23	14128	B	Primi	1.49	56	25.22	37.4	YES	625	32	250	LN with Epi	210	NO	NO	3.20	9.8	9.5
81	Supriya	C	26	14910	B	G2P1L1	1.56	43	17.67	38.4	NO	360	35	440	LN with Epi	390	NO	NO	2.60	10.4	9.5
82	KalaiSelvi	S	26	14023	B	Primi	1.53	69	29.48	38.4	YES	695	18	280	LN with Epi	120	NO	NO	2.80	10.2	9.8
83	Menaga	C	24	14917	B	Primi	1.54	58	24.46	38.5	YES	650	24	400	LN with Epi	380	NO	NO	2.60	10.4	9.5
84	Jamini	S	22	14129	B	G2P1L1	1.59	61	24.13	38.6	YES	320	12	150	LN	85	NO	NO	3.40	10.4	10.2
85	Shobana	C	27	15243	B	G2P1L1	1.71	65	22.23	38.4	YES	345	35	520	LN with Epi	850	YES	YES	2.50	10.6	9.0
86	Hemalatha	S	25	14252	B	Primi	1.56	55	22.60	38.1	YES	580	20	220	LN with Epi	215	NO	NO	2.50	10.2	10.1
87	Vidhya	C	32	14387	B	G2P1L1	1.53	65	27.77	39.1	YES	320	15	220	LN with Epi	180	NO	NO	2.80	10.4	9.4
88	Nagalakshmi	S	21	14252	B	Primi	1.54	51	21.50	38.4	YES	620	18	120	LN with Epi	130	NO	NO	2.80	9.8	9.6
89	Jeyanthi	C	24	14434	B	Primi	1.54	63	26.56	38.8	NO	650	30	300	LN with Epi	360	NO	NO	2.80	10.2	9.4
90	DesaRani	S	22	14414	B	Primi	1.66	64	23.23	37.4	NO	640	35	260	LN with Epi	210	NO	NO	2.60	11.0	10.8
91	Nathiya	C	23	14439	B	G2P1L1	1.61	61	23.53	38.4	YES	345	20	240	LN with Epi	190	NO	NO	2.60	10.5	10.2
92	Devi	S	20	14062	B	Primi	1.55	61	25.39	38.4	YES	580	18	280	LN with Epi	140	NO	NO	3.20	10.4	10.2
93	Lalitha	C	21	14167	B	Primi	1.55	60	24.97	38.6	YES	620	24	200	LN with Epi	280	NO	NO	3.10	9.8	9.4
94	Thulasi	S	23	14561	B	Primi	1.61	66	25.46	38.1	YES	545	10	80	LN with Epi	75	NO	NO	2.80	10.3	10.2
95	Janagi	C	25	14423	B	G2P1L1	1.56	60	24.65	38.8	NO	355	20	320	LN with LP	285	NO	NO	3.80	10.1	9.4
96	Aanadhi	S	26	14574	B	Primi	1.57	49	19.88	38.2	YES	645	18	120	LN with Epi	150	NO	NO	3.90	10.2	9.8
97	Nagalakshmi	C	21	14252	B	G2P1L1	1.51	71	31.14	37.6	YES	355	14	280	LN with Epi	275	NO	NO	2.70	9.8	9.1
98	Indhira	S	23	14623	B	Primi	1.65	63	23.14	38.3	YES	620	25	360	LN with Epi	220	NO	NO	2.70	10.0	9.8
99	Thameema	C	23	14184	UB	G2P1L1	1.56	64	26.30	37.2	YES	345	15	120	LN with Epi	80	NO	NO	3.20	10.2	9.4
100	UmaRani	S	24	14286	B	Primi	1.61	67	25.85	37.4	YES	680	20	220	LN with Epi	120	NO	NO	3.10	9.8	9.6
101	Jalaja	C	25	14269	B	G2P1L1	1.61	66	25.46	37.4	YES	320	17	280	LN with Epi	170	NO	NO	2.60	10.2	9.4
102	Shanthakuma	S	27	14229	B	Primi	1.51	57	25.00	38.2	YES	680	35	110	LN with Epi	360	NO	NO	2.70	9.8	9.6
103	Rajeswari	C	21	14326	B	Primi	1.54	65	27.41	38.1	YES	645	26	240	LN with Epi	180	NO	NO	3.00	10.2	9.2
104	Vasanthi	S	19	14337	B	Primi	1.58	66	26.44	37.4	YES	625	22	280	LN	140	NO	NO	2.80	10.4	10.1
105	Rukmani	C	23	14380	B	G2P1L1	1.57	68	27.59	38.5	YES	345	24	240	LN with Epi	180	NO	NO	3.20	10.0	9.2
106	Priyanka	S	26	14367	B	G3P2L2	1.62	54	20.58	38.6	NO	350	13	240	LN with Epi	130	NO	NO	3.00	9.8	9.6
107	Vidya	C	24	14387	B	G2P1L1	1.48	60	27.39	38.4	YES	345	27	340	LN with Epi	360	NO	NO	3.40	10.2	10.0
108	Kavitha	S	23	14382	UB	Primi	1.51	54	23.68	39.2	YES	655	36	280	LN with Epi	320	NO	NO	3.00	10.2	9.8
109	Nathiya	C	23	14439	B	Primi	1.55	65	27.06	39.0	YES	680	34	320	LN with Epi	380	NO	NO	3.40	9.8	9.6
110	Shanthi	S	24	14410	B	Primi	1.57	68	27.59	38.4	YES	645	20	120	LN with Epi	85	NO	NO	2.60	10.2	10.0
111	Abirami	C	26	14443	B	G2P1L1	1.56	61	25.07	38.1	YES	340	15	200	LN with Epi	120	NO	NO	3.00	10.4	10.2
112	Lokeswari	S	25	14389	B	G2P1L1	1.61	83	32.02	37.4	YES	320	12	160	LN	180	NO	NO	3.00	9.8	9.4
113	Manjula	C	23	14356	B	Primi	1.59	59	23.34	38.2	YES	670	43	300	LN with Epi	950	YES	YES	3.20	10.2	9.0
114	Tamilarasi	S	23	14388	B	Primi	1.47	61	28.23	38.1	YES	640	22	140	LN with Epi	210	NO	NO	3.20	10.6	10.0
115	Banu	C	21	14392	B	Primi	1.57	58	23.53	38.4	YES	650	24	280	LN with Epi	175	NO	NO	3.20	10.0	9.8
116	Jeyanthi	S	24	14392	B	Primi	1.53	62	26.49	37.6	YES	550	18	120	LN with Epi	110	NO	NO	3.50	10.4	10.0
117	Chellakili	C	27	14410	B	G2P1L1	1.52	60	25.97	38.1	YES	340	24	400	LN with Epi	450	NO	NO	2.70	10.2	9.8

118	Nirosha	S	23	14469	B	Primi	1.47	60	27.77	37.4	YES	640	32	260	LN with Epi	310	NO	NO	2.80	9.8	9.6
119	Eswari	C	31	14320	B	G2P1L1	1.51	50	21.93	39.1	NO	280	24	260	LN with Epi	280	NO	NO	3.20	10.4	10.0
120	Meenachi	S	26	14344	B	G2P1L1	1.58	50	20.03	38.4	YES	265	18	240	LN with Epi	160	NO	NO	3.00	10.2	9.8
121	Vanitha	C	21	14493	B	Primi	1.51	59	25.88	39.2	YES	620	35	340	LN with Epi	150	NO	NO	2.90	10.4	10.2
122	Suganya	S	22	14504	B	Primi	1.47	48	22.21	38.5	YES	580	28	280	LN with Epi	150	NO	NO	3.20	10.6	10.0
123	Priya	C	21	14325	B	Primi	1.59	64	25.32	39.1	YES	670	36	360	LN with Epi	380	NO	NO	3.20	9.8	9.4
124	Jothy	S	27	14472	B	Primi	1.55	59	24.56	38.4	YES	620	44	360	LN with Epi	440	NO	NO	2.10	9.8	9.2
125	Gayathri	C	26	14412	B	G2P1L1	1.53	56	23.92	37.6	YES	300	15	280	LN with Epi	180	NO	NO	2.80	10.4	10.3
126	Premalatha	S	21	14373	B	Primi	1.58	65	26.04	38.3	YES	590	18	240	LN with Epi	140	NO	NO	2.10	10.2	9.8
127	Revathy	C	24	14531	B	G2P1L1	1.52	65	28.13	38.1	YES	285	20	260	LN with Epi	290	NO	NO	2.20	10.0	9.6
128	Rajeswari	S	20	14515	B	Primi	1.45	50	23.78	39.2	YES	620	18	380	LN with Epi	145	NO	NO	3.20	10.2	10.0
129	Aasha	C	23	14454	B	Primi	1.52	50	21.64	38.6	YES	680	26	360	LN with Epi	440	NO	NO	2.40	10.4	9.6
130	Samantha	S	23	14524	B	Primi	1.55	42	17.48	39.4	YES	640	18	120	LN with Epi	210	NO	NO	2.50	9.8	9.6
131	Supriya	C	22	14910	B	Primi	1.48	55	25.11	39.1	YES	680	35	460	LN with Epi	400	NO	NO	3.10	10.2	9.8
132	Nathiya	S	26	14528	B	G2P1L1	1.53	57	24.35	37.5	YES	320	12	110	LN with LP	120	NO	NO	2.50	10.0	9.8
133	Meenachi	C	21	14708	B	Primi	1.52	68	29.43	38.4	YES	585	32	440	LN with Epi	380	NO	NO	2.70	9.8	9.2
134	Aathi	S	24	12234	B	Primi	1.70	64	22.15	37.1	YES	620	14	220	LN with Epi	160	NO	NO	2.40	10.4	10.2
135	Saroja devi	C	22	14570	B	G2P1L1	1.58	60	24.03	37.4	YES	320	35	440	LN with Epi	800	YES	YES	3.30	10.2	9.0
136	Bavani	S	25	14656	B	Primi	1.52	64	27.70	37.4	YES	540	20	260	LN with Epi	180	NO	NO	2.70	10.2	10.0
137	Poongodi	C	28	14665	B	G2P1L1	1.55	54	22.48	38.2	YES	280	14	220	LN with Epi	90	NO	NO	2.40	10.4	9.8
138	Meena	S	22	14708	B	Primi	1.53	62	26.49	38.4	YES	545	10	120	LN with Epi	75	NO	NO	2.70	10.2	10.0
139	Rajeswari	C	21	14855	B	Primi	1.53	50	21.36	38.5	YES	580	28	320	LN with Epi	400	NO	NO	2.70	9.8	9.2
140	Gunasundari	S	21	14729	B	Primi	1.60	60	23.44	37.5	NO	590	24	220	LN with Epi	210	NO	NO	2.50	10.2	10.0
141	Devika	C	24	14882	B	G2P1L1	1.65	63	23.14	38.2	YES	350	18	260	LN with LP	285	NO	NO	2.50	10.4	9.6
142	Abirami	S	25	14831	B	G2P1L1	1.54	59	24.88	38.5	NO	310	15	120	LN with Epi	130	NO	NO	3.00	9.8	9.6
143	UshaMary	C	23	14901	B	Primi	1.54	60	25.30	37.4	YES	620	40	300	LN with Epi	290	NO	NO	3.10	9.8	9.4
144	Aanadhi	S	26	14896	B	Primi	1.55	59	24.56	38.3	YES	640	45	300	LN with Epi	320	NO	NO	3.70	10.0	9.8
145	Latha	C	22	15514	B	Primi	1.60	65	25.39	38.1	YES	680	55	340	LN with Epi	750	YES	YES	2.70	10.2	9.0
146	Kalaivani	S	21	15480	B	Primi	1.50	70	31.11	39.2	YES	560	25	140	LN	60	NO	NO	2.60	9.8	9.6
147	Tamilselvi	C	25	15461	B	G2P1L1	1.45	48	22.83	37.4	YES	320	24	280	LN with Epi	360	NO	NO	3.80	10.0	9.2
148	Pusphalatha	S	20	15453	B	Primi	1.55	63	26.22	38.2	YES	620	20	180	LN with Epi	140	NO	NO	3.10	10.2	10.0
149	Sumathy	C	22	15466	B	G2P1L1	1.64	62	23.05	38.1	NO	280	25	160	LN with Epi	290	NO	NO	2.60	10.4	9.8
150	Prema	S	27	15473	B	Primi	1.60	65	25.39	39.2	YES	680	48	330	LN with Epi	700	YES	YES	2.50	9.8	9.6
151	Flora	C	23	15444	B	Primi	1.60	66	25.78	37.5	YES	645	32	280	LN with Epi	350	NO	NO	3.00	10.2	9.4
152	Yuvarani	S	28	15361	B	Primi	1.53	64	27.34	39.4	YES	560	25	220	LN with Epi	100	NO	NO	2.90	10.6	10.2
153	Asta Lakshmi	C	21	15392	B	Primi	1.50	56	24.89	37.4	YES	640	22	260	LN with Epi	260	NO	NO	2.60	11.0	10.2
154	Vishalakshi	S	32	15395	B	G2P1L1	1.56	67	27.53	37.6	YES	320	14	220	LN with Epi	120	NO	NO	3.10	10.2	10.0
155	Gokila	C	28	15387	UB	G2P1L1	1.57	65	26.37	39.2	YES	280	16	260	LN with Epi	150	NO	NO	2.70	10.4	10.2
156	Sumathy	S	24	15384	B	Primi	1.47	59	27.30	38.3	YES	625	22	200	LN with Epi	140	NO	NO	3.30	10.2	9.8
157	Jannath	C	24	15530	B	Primi	1.61	53	20.45	37.4	YES	645	40	340	LN with Epi	650	YES	YES	2.90	10.4	9.6

158	NaseemaBar	S	21	15362	B	Primi	1.54	64	26.99	38.5	YES	585	23	180	LN with Epi	160	NO	NO	3.30	10.8	10.6
159	Mahalakshmi	C	23	15338	B	Primi	1.50	53	23.56	39.1	YES	640	25	320	LN with Epi	240	NO	NO	2.90	10.6	10.0
160	Padmavathy	S	26	15327	B	G2P1L1	1.55	60	24.97	38.5	YES	340	18	240	LN with Epi	320	NO	NO	2.90	9.8	9.4
161	Mahalakshmi	C	21	15357	B	Primi	1.56	67	27.53	37.6	YES	580	17	200	LN with Epi	230	NO	NO	2.50	10.4	9.8
162	Malar	S	23	15332	UB	Primi	1.58	58	23.23	39.2	YES	620	35	260	LN with Epi	450	NO	NO	3.10	10.6	10.2
163	Malathy	C	22	15313	B	Primi	1.60	82	32.03	38.6	YES	580	32	300	LN with Epi	275	NO	NO	2.90	10.2	9.2
164	Poornima	S	26	15351	B	Primi	1.56	57	23.42	39.3	YES	620	45	320	LN with Epi	360	NO	NO	3.10	9.8	9.6
165	Sangeetha	C	24	15328	B	G2P1L1	1.46	60	28.15	38.6	YES	320	28	320	LN with Epi	280	NO	NO	3.10	10.4	9.6
166	Banupriya	S	22	15308	B	G2P1L1	1.51	59	25.88	39.4	YES	240	12	100	LN with Epi	75	NO	NO	2.60	10.6	10.4
167	Rohini	C	21	15324	B	Primi	1.52	61	26.40	38.2	YES	580	45	380	LN with Epi	260	NO	NO	3.40	9.8	9.0
168	Vanitha	S	27	15339	B	G2P1L1	1.50	48	21.33	38.3	YES	280	23	240	LN with Epi	180	NO	NO	3.10	10.2	9.8
169	Amitha	C	22	14951	B	G2P1L1	1.46	59	27.68	38.6	YES	300	18	260	LN with Epi	280	NO	NO	2.70	10.4	9.8
170	Benazeer	S	28	15296	B	G3P2L2	1.50	58	25.78	37.3	YES	280	15	120	LN with Epi	110	NO	NO	2.80	10.2	10.0
171	Thenmozhi	C	23	15311	B	Primi	1.57	49	19.88	37.5	YES	655	52	340	LN with Epi	560	NO	YES	2.90	10.6	10.0
172	Lakshmi	S	19	15322	B	G2P1L1	1.58	63	25.24	37.4	YES	320	18	280	LN with Epi	340	NO	NO	3.10	10.4	9.8
173	Deepa	C	27	16473	B	G2P1L1	1.46	47	22.05	38.2	YES	340	30	360	LN with Epi	740	YES	YES	3.10	9.8	8.8
174	Chithra	S	22	16468	B	G2P1L1	1.52	55	23.81	38.4	YES	285	20	200	LN with Epi	150	NO	NO	2.70	10.4	10.2
175	Anitha	C	21	16493	B	Primi	1.54	58	24.46	38.5	YES	640	18	280	LN with Epi	250	NO	NO	2.00	11.0	10.2
176	Kalaivani	S	26	16478	B	G2P1L1	1.51	64	28.07	37.5	YES	220	10	80	LN with Epi	80	NO	NO	2.10	10.2	10.0
177	Selvi	C	21	16475	B	Primi	1.57	64	25.96	39.2	YES	585	17	300	LN with Epi	140	NO	NO	2.20	10.8	10.2
178	Kumudha	S	23	22	B	G2P1L1	1.51	49	21.49	37.4	YES	320	18	120	LN with LP	110	NO	NO	2.30	10.2	10.0
179	Muniammal	C	27	20	B	G2P1L1	1.45	49	23.31	39.1	YES	360	25	480	LN with LP	1,000	YES	YES	3.10	10.8	9.0
180	Suriya	S	21	23	B	Primi	1.47	54	24.99	38.2	YES	620	35	380	LN with Epi	340	NO	NO	3.00	10.4	10.2
181	Desam	C	22	37	B	Primi	1.54	41	17.29	39.3	YES	680	32	320	LN with Epi	480	NO	NO	2.40	9.8	9.2
182	Saranya	S	26	36	B	Primi	1.51	67	29.38	37.5	YES	580	24	220	LN with Epi	210	NO	NO	2.60	10.2	10.0
183	Drish	C	25	34	B	G2P1L1	1.52	56	24.24	38.4	YES	280	18	280	LN with Epi	340	NO	NO	2.40	10.4	10.0
184	Rubavathy	S	23	27	B	G2P1L1	1.57	59	23.94	37.4	YES	320	22	340	LN with LP	220	NO	NO	3.20	10.0	9.6
185	Kumari	C	23	55	B	Primi	1.69	63	22.06	37.5	NO	655	26	310	LN with Epi	265	NO	NO	2.30	10.2	9.2
186	Kasthuri	S	26	50	B	Primi	1.54	55	23.19	38.4	YES	675	17	280	LN with Epi	225	NO	NO	2.30	10.6	10.4
187	Dhanapriya	C	26	12	B	G2P1L1	1.51	63	27.63	38.1	YES	320	16	240	LN with Epi	245	NO	NO	2.60	10.8	10.2
188	Shabeena	S	24	61	B	G2P1L1	1.52	59	25.54	37.4	NO	310	20	260	LN	205	NO	NO	2.60	10.2	10.0
189	Murugeshwar	C	21	70	B	Primi	1.52	61	26.40	38.2	NO	640	32	280	LN with Epi	255	NO	NO	2.60	9.8	9.0
190	Murugavalli	S	27	62	B	Primi	1.64	62	23.05	38.1	YES	580	23	120	LN with Epi	240	NO	NO	2.40	10.2	10.0
191	Hemaltha	C	22	71	B	G2P1L1	1.59	59	23.34	38.6	YES	240	13	140	LN	90	NO	NO	2.40	10.4	9.8
192	Kanmani	S	33	16424	B	G2P1L1	1.53	59	25.20	38.3	YES	320	17	160	LN with Epi	240	NO	NO	3.00	10.0	9.8
193	Udaya	C	21	57	B	Primi	1.53	58	24.78	38.2	YES	675	24	300	LN with Epi	330	NO	NO	2.90	9.8	9.2
194	Parvathy	S	22	96	B	Primi	1.59	64	25.32	38.4	YES	585	15	140	LN with Epi	75	NO	NO	2.60	10.2	9.8
195	Vaanmathy	C	24	103	UB	Primi	1.54	58	24.46	38.6	YES	600	35	320	LN with Epi	320	NO	NO	3.60	11.0	10.4
196	Eshwari	S	28	16495	B	G2P1L1	1.45	47	22.35	38.4	YES	260	17	130	LN with Epi	210	NO	NO	3.70	10.5	10.2
197	Gayathri	C	21	123	B	Primi	1.49	69	31.08	38.6	YES	655	40	380	LN with Epi	800	YES	YES	2.50	10.2	9.0

198	Indrani	S	23	108	B	Primi	1.63	61	22.96	37.3	YES	700	45	340	LN with Epi	750	YES	YES	2.50	10.4	9.0
199	Indumathy	C	22	125	B	Primi	1.54	62	26.14	39.1	YES	710	35	420	LN with Epi	310	NO	NO	3.00	10.8	10.0
200	Marykrishna	S	28	76	B	Primi	1.59	65	25.71	37.4	YES	685	23	240	LN with Epi	110	NO	NO	2.90	10.0	9.8
201	Arshalatchmi	S	22	149	B	G2P1L1	1.54	61	25.72	38.2	YES	265	12	150	LN with Epi	130	NO	NO	3.50	11.0	10.8
202	Karpagam	C	26	187	B	Primi	1.52	60	25.97	38.1	YES	655	17	420	LN with Epi	120	NO	NO	2.80	10.2	9.4
203	Shanthini	S	25	155	B	G2P1L1	1.48	60	27.39	38.4	YES	285	14	120	LN with Epi	220	NO	NO	2.70	10.6	10.4
204	Jayalakshmi	C	27	144	B	G2P1L1	1.51	49	21.49	38.2	YES	320	18	260	LN with Epi	250	NO	NO	2.30	9.6	9.0
205	Meena	S	20	156	B	Primi	1.58	51	20.43	39.1	YES	665	22	360	LN with Epi	150	NO	NO	3.00	9.8	9.6
206	Sridevi	C	20	133	B	Primi	1.51	59	25.88	38.8	YES	675	36	340	LN with Epi	280	NO	NO	2.90	9.8	9.0
207	Mahalakshmi	S	23	158	B	Primi	1.48	48	21.91	39.6	YES	650	24	220	LN with Epi	220	NO	NO	3.20	9.8	9.6
208	Latha	C	22	171	B	Primi	1.59	63	24.92	37.5	YES	685	24	340	LN	270	NO	NO	3.10	10.9	10.2
209	Rajalakshmi	S	23	172	B	Primi	1.55	59	24.56	38.1	YES	645	32	240	LN with Epi	150	NO	NO	2.10	9.8	9.6
210	Lakshmi	C	21	175	B	G2P1L1	1.53	56	23.92	37.6	YES	255	17	280	LN with Epi	130	NO	NO	2.80	9.8	9.2
211	Tamil mani	S	26	169	B	Primi	1.59	65	25.71	38.5	YES	545	20	175	LN with Epi	80	NO	NO	2.10	10.8	10.6
212	Gomathy	C	22	16492	B	G2P1L1	1.52	66	28.57	38.5	YES	320	18	260	LN with Epi	290	NO	NO	2.20	10.2	9.4
213	Deepa	S	24	179	B	G2P1L1	1.45	50	23.78	38.2	NO	265	15	180	LN with Epi	75	NO	NO	3.30	9.8	9.4
214	Anitha	C	22	186	B	G2P1L1	1.52	50	21.64	38.3	YES	340	28	360	LN with Epi	240	NO	NO	2.50	9.8	9.0
215	Jagadeeshwa	S	21	185	B	G2P1L1	1.56	45	18.49	38.2	YES	300	22	245	LN with Epi	230	NO	NO	2.50	9.6	9.4
216	Bhavani	C	24	59	B	Primi	1.48	55	25.11	37.5	YES	700	35	480	LN with Epi	270	NO	NO	3.10	10.4	9.8
217	Suganya	S	28	190	B	G2P1L1	1.53	57	24.35	38.1	YES	320	22	260	LN	150	NO	NO	2.50	10.2	10.0
218	Shobhana	C	22	196	B	G2P1L1	1.52	68	29.43	37.6	YES	345	26	410	LN with Epi	270	NO	NO	2.70	10.0	9.2
219	Eshwari	S	20	201	B	G2P1L1	1.70	62	21.45	38.4	YES	320	28	300	LN with Epi	205	NO	NO	2.40	9.8	9.4
220	Bharathy	C	22	194	B	Primi	1.58	60	24.03	37.2	YES	695	24	460	LN with Epi	220	NO	NO	3.30	10.1	9.2
221	Deivanai	S	21	197	B	Primi	1.53	64	27.34	39.1	YES	565	15	120	LN with Epi	155	NO	NO	2.80	9.5	9.3
222	Vaideeshwari	C	23	211	B	G2P1L1	1.55	56	23.31	38.2	YES	280	12	210	LN with Epi	100	NO	NO	2.40	10.3	9.4
223	Rajathi	S	24	205	B	G2P1L1	1.53	62	26.49	39.2	YES	285	18	240	LN with Epi	210	NO	NO	2.70	9.8	9.6
224	Hemalatha	C	24	207	B	G2P1L1	1.53	50	21.36	37.6	YES	360	22	320	LN with Epi	290	NO	NO	2.60	10.2	9.6
225	Megala	S	22	209	B	G2P1L1	1.60	60	23.44	38.3	YES	285	13	130	LN with Epi	140	NO	NO	2.50	10.6	10.4
226	Narmalatha	C	21	212	B	Primi	1.65	62	22.77	37.5	YES	655	23	240	LN with Epi	280	NO	NO	2.50	10.4	9.8
227	Vijaya	S	28	202	B	G2P1L1	1.55	59	24.56	37.2	YES	285	24	270	LN with Epi	220	NO	NO	3.00	10.0	9.8
228	Devi	C	23	210	B	G2P1L1	1.54	60	25.30	37.2	YES	325	14	200	LN with Epi	140	NO	NO	3.10	9.8	9.6
229	Venilla	S	22	237	B	Primi	1.56	59	24.24	38.5	YES	645	28	240	LN with Epi	170	NO	NO	3.70	9.8	9.2
230	Desam	C	32	246	B	G2P1L1	1.60	63	24.61	38.1	YES	360	22	310	LN with Epi	260	NO	NO	2.70	9.8	9.2
231	Jayanthi	S	26	256	B	G2P1L1	1.50	70	31.11	39.2	YES	240	13	80	LN with Epi	120	NO	NO	2.60	9.6	9.4
232	Deepa	C	21	257	B	G2P1L1	1.44	48	23.15	38.1	YES	325	18	280	LN	285	NO	NO	2.60	9.8	9.4
233	Gokila	S	27	220	B	Primi	1.56	64	26.30	39.2	YES	565	20	120	LN with Epi	75	NO	NO	3.10	10.0	9.8
234	Parvin	C	24	252	B	Primi	1.64	62	23.05	38.6	YES	545	25	130	LN with Epi	300	NO	NO	2.60	10.2	9.6
235	Mumtaj Bega	S	27	239	B	G2P1L1	1.61	65	25.08	39.4	YES	360	24	380	LN with Epi	210	NO	NO	2.50	10.4	10.2
236	Puvi Arasi	C	27	259	B	G2P1L1	1.60	66	25.78	37.5	YES	340	15	280	LN with Epi	270	NO	NO	3.10	10.0	9.4
237	Sagaya Mary	S	23	67	B	Primi	1.54	64	26.99	38.5	YES	660	18	230	LN with Epi	130	NO	NO	2.90	9.8	9.5

238	Revathy	C	28	277	B	G2P1L1	1.50	56	24.89	38.8	YES	295	15	240	LN with Epi	160	NO	NO	2.60	10.6	9.2
239	Varalakshmi	S	35	283	UB	G2P1L1	1.57	68	27.59	38.3	NO	340	30	350	LN with Epi	210	NO	NO	3.10	10.2	9.8
240	Devi	C	22	236	B	G2P1L1	1.57	65	26.37	37.2	YES	300	24	260	LN with Epi	265	NO	NO	2.70	10.2	9.2
241	Soniya	S	28	291	B	G2P1L1	1.48	59	26.94	39.1	YES	340	25	300	LN with Epi	140	NO	NO	3.30	9.8	9.7
242	Logesh Wari	C	24	293	B	G2P1L1	1.61	54	20.83	38.5	YES	360	28	330	LN with Epi	275	NO	NO	2.90	9.6	9.0
243	Pavithra	S	24	288	B	Primi	1.55	64	26.64	39.2	YES	600	18	220	LN with Epi	225	NO	NO	3.30	10.2	10.0
244	Anthoniyamm	C	20	302	B	Primi	1.50	53	23.56	38.8	YES	655	35	310	LN with Epi	280	NO	NO	2.80	10.0	9.4
245	Bhavani	S	24	99	B	G2P1L1	1.56	60	24.65	38.2	YES	265	25	260	LN with Epi	150	NO	NO	2.90	9.8	9.6
246	Vasanthi	C	29	316	B	G2P1L1	1.56	66	27.12	38.2	YES	245	15	180	LN with LP	280	NO	NO	2.50	10.4	10.0
247	Asnath	S	25	313	B	G2P1L1	1.57	58	23.53	38.4	YES	240	12	110	LN with Epi	65	NO	NO	3.10	10.4	10.2
248	Rekha	C	21	297	B	G2P1L1	1.60	82	32.03	37.6	YES	340	35	320	LN with Epi	290	NO	NO	2.90	9.8	9.2
249	Meenakshi	S	24	304	B	Primi	1.56	58	23.83	38.4	YES	585	28	160	LN with Epi	170	NO	NO	3.10	10.2	10.0
250	Revathy	C	20	326	B	Primi	1.46	60	28.15	38.4	YES	700	35	300	LN with Epi	380	NO	NO	3.10	10.0	9.4
251	Nathiya	S	24	332	B	G2P1L1	1.51	52	22.81	38.1	YES	245	16	120	LN with Epi	160	NO	NO	2.50	10.4	10.0
252	Malathi	C	20	333	B	G2P1L1	1.54	54	22.77	39.0	YES	265	12	140	LN with Epi	170	NO	NO	3.10	10.1	10.0
253	Nithiya	S	21	310	B	G2P1L1	1.54	59	24.88	38.0	YES	345	18	280	LN with Epi	150	NO	NO	2.90	11.0	10.8
254	Mumtaj	C	21	353	UB	Primi	1.53	53	22.64	38.0	YES	675	24	340	LN with Epi	90	NO	NO	3.10	11.8	11.6
255	Shalini	S	25	317	B	G2P1L1	1.47	52	24.06	38.2	YES	300	18	250	LN with Epi	220	NO	NO	2.40	10.4	10.2
256	Indumathi	C	21	359	B	G2P1L1	1.47	59	27.30	37.6	NO	285	14	140	LN with Epi	275	NO	NO	2.60	10.2	9.8
257	Indumathi	S	23	12357	B	Primi	1.52	62	26.84	37.4	YES	600	35	240	LN with Epi	220	NO	NO	3.10	9.8	9.5
258	Sasikala	C	18	357	B	Primi	1.51	60	26.31	37.6	YES	565	25	140	LN with Epi	280	NO	NO	3.70	10.2	9.6
259	Abirami	S	23	353	B	G2P1L1	1.52	52	22.51	38.4	YES	265	16	120	LN with Epi	130	NO	NO	3.30	10.4	10.0
260	Seetha	C	35	351	B	G2P1L1	1.58	59	23.63	38.4	YES	300	28	310	LN with Epi	275	NO	NO	2.20	10.4	9.8
261	Kowsalya	S	23	276	B	Primi	1.59	58	22.94	39.1	YES	575	16	220	LN with Epi	120	NO	NO	3.20	9.8	9.5
262	Sulochana	C	26	305	B	Primi	1.52	48	20.78	38.4	YES	685	24	340	LN with Epi	180	NO	NO	2.80	9.8	9.2
263	Jeeva	S	24	358	B	G2P1L1	1.51	50	21.93	39.2	YES	260	15	120	LN with Epi	85	NO	NO	3.30	10.2	10.0
264	Jeyalakshmi	C	31	389	B	G3P2L2	1.52	55	23.81	39.1	YES	340	40	360	LN with Epi	290	NO	NO	2.70	10.4	9.4
265	Sharmila	S	24	394	B	G2P1L1	1.52	54	23.37	38.1	NO	300	14	220	LN with Epi	110	NO	NO	2.50	9.6	9.4
266	Kavitha	C	23	16122	B	Primi	1.53	63	26.91	39.1	YES	545	13	140	LN with Epi	110	NO	NO	2.80	10.2	9.8
267	Roja	C	21	344	B	Primi	1.54	63	26.56	38.2	YES	700	38	420	LN with Epi	390	NO	NO	3.60	9.6	9.1
268	Tamilarasi	S	26	396	B	G2P1L1	1.52	50	21.64	39.4	YES	285	12	120	LN with Epi	80	NO	NO	3.30	9.8	9.5
269	Kokila	C	22	395	B	Primi	1.48	61	27.85	38.5	NO	600	28	280	LN with Epi	180	NO	NO	2.90	10.2	9.8
270	Bharathi	S	24	406	B	G2P1L1	1.50	59	26.22	38.6	YES	360	20	340	LN with Epi	120	NO	NO	3.00	10.5	10.1
271	Manjula	C	23	416	B	G2P1L1	1.59	51	20.17	39.1	YES	320	25	300	LN with Epi	320	NO	NO	3.10	10.2	9.4
272	Rejina Begun	S	21	994	B	Primi	1.58	65	26.04	38.5	YES	645	22	240	LN with Epi	250	NO	NO	3.30	10.0	9.8
273	Mageshwari	C	26	988	B	G2P1L1	1.48	51	23.28	38.6	YES	360	25	320	LN with Epi	340	NO	NO	3.30	10.6	9.8
274	Katheeja	S	18	997	B	Primi	1.54	57	24.03	39.1	YES	565	18	180	LN with Epi	190	NO	NO	2.90	10.2	10.0
275	Priya	C	21	998	B	Primi	1.56	60	24.65	38.6	YES	675	32	280	LN	190	NO	NO	2.10	10.0	9.2
276	Sowmiya	S	27	935	B	Primi	1.52	66	28.57	38.4	YES	600	22	160	LN with Epi	210	NO	NO	2.30	10.2	9.8
277	Sudha	C	21	993	B	G2P1L1	1.59	64	25.32	38.5	YES	320	35	300	LN with Epi	360	NO	NO	2.20	9.8	9.1

278	Rebeca	S	25	100	B	Primi	1.53	51	21.79	38.5	YES	615	22	260	LN	130	NO	NO	2.50	10.4	10.1
279	Sangeetha	C	22	981	B	Primi	1.46	51	23.93	37.2	YES	655	35	360	LN with Epi	380	NO	NO	3.30	10.4	9.4
280	Satha Kumar	S	23	1034	B	Primi	1.48	57	26.02	39.1	YES	670	22	250	LN with Epi	210	NO	NO	3.20	9.8	9.5
281	Ammu Laksh	C	26	4035	B	G2P1L1	1.56	43	17.67	38.4	NO	360	35	440	LN with Epi	390	NO	NO	2.60	10.4	9.5
282	Magesh Wari	S	26	1036	B	Primi	1.53	69	29.48	38.4	YES	600	22	280	LN with Epi	120	NO	NO	2.80	9.8	9.4
283	Usha	C	24	1037	B	G2P1L1	1.54	58	24.46	38.5	YES	345	28	400	LN with Epi	380	NO	NO	2.60	10.4	9.5
284	Sratha	S	21	995	B	G2P1L1	1.58	61	24.44	38.2	YES	275	13	150	LN	85	NO	NO	3.40	10.2	10.0
285	Saranya	C	27	1002	B	G2P1L1	1.71	64	21.89	38.6	YES	360	32	510	LN with Epi	850	YES	YES	2.80	10.6	9.0
286	Deepa	S	25	1044	B	Primi	1.55	55	22.89	38.1	YES	600	25	220	LN with Epi	215	NO	NO	2.50	10.2	10.1
287	Sudha	C	32	1033	B	G2P1L1	1.54	65	27.41	39.1	YES	285	20	220	LN with Epi	180	NO	NO	2.80	10.4	9.4
288	Kanniga	S	21	1045	B	Primi	1.54	51	21.50	38.4	YES	595	15	120	LN with Epi	130	NO	NO	2.80	9.6	9.2
289	Chellammal	C	24	1050	B	Primi	1.54	64	26.99	37.5	NO	700	28	300	LN with Epi	360	NO	NO	2.80	10.2	9.4
290	Bhuvaneshwa	S	21	1069	B	Primi	1.66	64	23.23	39.5	NO	675	25	260	LN with Epi	210	NO	NO	2.60	11.0	10.8
291	Jayamala	C	23	1067	B	Primi	1.62	61	23.24	38.4	YES	655	22	240	LN with Epi	190	NO	NO	2.60	10.5	10.2
292	Kalpana	S	20	1056	B	Primi	1.55	61	25.39	39.2	YES	665	20	280	LN with Epi	140	NO	NO	3.20	10.4	10.2
293	Munira	C	21	1031	B	G2P1L1	1.56	59	24.24	38.6	YES	300	17	210	LN with Epi	280	NO	NO	3.10	9.6	9.2
294	Radhika	S	22	1058	B	Primi	1.61	66	25.46	38.1	YES	540	15	80	LN with Epi	75	NO	NO	2.80	10.3	10.2
295	Nandhini	C	25	961	B	Primi	1.57	60	24.34	37.5	NO	700	18	320	LN with LP	285	NO	NO	3.80	10.1	9.4
296	Sudha	S	26	10687	B	Primi	1.57	50	20.28	38.2	YES	575	17	140	LN with Epi	150	NO	NO	3.80	10.2	9.8
297	Kalaiarasi	C	21	1049	B	G2P1L1	1.52	71	30.73	37.6	YES	320	22	280	LN with Epi	275	NO	NO	2.70	9.8	9.1
298	Kavitha	S	22	1077	B	Primi	1.65	63	23.14	38.3	YES	700	25	360	LN with Epi	220	NO	NO	2.70	10.0	9.8
299	Jeevitha	C	23	1079	UB	Primi	1.57	64	25.96	37.2	YES	560	16	120	LN with Epi	80	NO	NO	3.20	10.2	9.4
300	Devika	S	24	1082	B	Primi	1.61	66	25.46	39.1	YES	655	28	200	LN with Epi	130	NO	NO	3.10	9.8	9.6
301	Pushpalatha	C	25	1085	B	G2P1L1	1.62	66	25.15	37.4	YES	320	18	280	LN with Epi	170	NO	NO	2.60	10.2	9.4
302	Alamelu	S	27	1114	B	Primi	1.51	57	25.00	38.2	YES	565	24	110	LN with Epi	360	NO	NO	2.70	9.8	9.6
303	Usha	C	22	1115	B	G2P1L1	1.55	66	27.47	38.1	YES	320	22	240	LN with Epi	180	NO	NO	3.00	10.2	9.2
304	Sarnya	S	19	1133	B	Primi	1.58	66	26.44	39.1	YES	655	18	280	LN	130	NO	NO	2.80	10.4	10.1
305	Saranya	C	23	1150	B	Primi	1.57	68	27.59	38.5	YES	645	23	240	LN with Epi	180	NO	NO	3.20	10.0	9.2
306	Mobin	S	26	1149	B	G3P2L2	1.62	54	20.58	38.6	NO	320	18	240	LN with Epi	130	NO	NO	3.00	9.8	9.6
307	Kalaiselvi	C	25	1157	B	G2P1L1	1.49	59	26.58	38.4	YES	340	32	340	LN with Epi	360	NO	NO	3.40	10.2	10.0
308	Merru nisha	S	23	1161	UB	Primi	1.51	54	23.68	39.0	YES	675	35	280	LN with Epi	320	NO	NO	3.00	10.2	9.8
309	Benitha	C	24	1163	B	G2P1L1	1.56	65	26.71	37.5	YES	340	28	310	LN with Epi	370	NO	NO	3.40	9.8	9.6
310	Selvi	S	24	962	B	Primi	1.57	68	27.59	38.4	YES	600	22	120	LN with Epi	85	NO	NO	2.50	10.0	9.8
311	Vasanthi	C	27	1166	B	G2P1L1	1.58	61	24.44	38.1	YES	300	19	210	LN with Epi	120	NO	NO	3.00	10.4	10.2
312	Saranya	S	25	1185	B	G2P1L1	1.61	82	31.63	37.6	YES	265	14	160	LN	180	NO	NO	3.00	9.8	9.4
313	Tamilarasi	C	23	1171	B	Primi	1.59	59	23.34	38.2	YES	700	45	480	LN with Epi	960	YES	YES	3.20	10.2	9.0
314	Vijayalakshmi	S	23	1186	B	Primi	1.47	61	28.23	38.1	YES	575	32	140	LN with Epi	210	NO	NO	3.20	10.6	10.0
315	Vanitha	C	22	1154	B	G2P1L1	1.57	58	23.53	38.4	YES	320	17	280	LN with Epi	175	NO	NO	3.20	10.0	9.8
316	Logesh Wari	S	24	1197	B	Primi	1.53	63	26.91	37.6	YES	565	25	120	LN with Epi	110	NO	NO	3.50	10.4	10.0
317	Hari priya	C	27	1194	B	G2P1L1	1.55	60	24.97	38.3	YES	360	24	400	LN with Epi	450	NO	NO	2.70	10.2	9.8

318	Shobhana	S	23	1133	B	Primi	1.47	60	27.77	37.4	YES	575	35	260	LN with Epi	310	NO	NO	2.80	9.8	9.6
319	Suganya	C	31	1202	B	G2P1L1	1.51	52	22.81	39.1	NO	300	21	280	LN with Epi	280	NO	NO	3.20	10.4	10.0
320	Nadhiya devi	S	26	1189	B	G2P1L1	1.58	50	20.03	38.4	YES	340	15	240	LN with Epi	160	NO	NO	3.00	10.2	9.8
321	Sri vijaya	C	22	1205	B	Primi	1.52	59	25.54	39.0	YES	700	35	340	LN with Epi	150	NO	NO	2.90	10.4	10.2
322	Priyanka	S	22	1240	B	Primi	1.47	48	22.21	38.5	YES	655	25	280	LN with Epi	150	NO	NO	3.20	10.6	10.0
323	Sangeetha	C	27	1260	B	Primi	1.59	62	24.52	39.1	YES	715	32	360	LN with Epi	380	NO	NO	3.20	9.6	9.5
324	Rani	S	27	1271	B	Primi	1.55	59	24.56	38.4	YES	675	45	360	LN with Epi	440	NO	NO	2.20	9.8	9.2
325	Dhanalakshm	C	27	1253	B	Primi	1.52	56	24.24	37.6	YES	655	18	280	LN with Epi	180	NO	NO	2.80	10.4	10.3
326	Bhavani	S	21	1278	B	Primi	1.58	66	26.44	38.1	YES	645	20	240	LN with Epi	150	NO	NO	2.10	10.2	9.8
327	Bhathar nisha	C	24	1274	B	G2P1L1	1.50	65	28.89	38.1	YES	340	15	260	LN with Epi	290	NO	NO	2.20	10.0	9.6
328	Logamma	S	20	1317	B	Primi	1.45	50	23.78	39.4	YES	685	26	380	LN with Epi	135	NO	NO	3.20	10.0	9.8
329	Bharathi	C	24	1315	B	Primi	1.51	50	21.93	38.6	YES	690	35	360	LN with Epi	440	NO	NO	2.40	10.4	9.6
330	Vijayalakshmi	S	23	1320	B	G2P1L1	1.55	42	17.48	39.4	YES	255	15	120	LN with Epi	210	NO	NO	2.50	9.8	9.6
331	Shakeela	C	22	1321	B	Primi	1.48	55	25.11	39.3	YES	710	35	460	LN with Epi	400	NO	NO	3.10	10.2	9.8
332	Janaki	S	26	1324	B	Primi	1.53	56	23.92	39.1	YES	540	18	110	LN with LP	120	NO	NO	2.50	10.0	9.8
333	Swathi	C	22	1306	B	G2P1L1	1.51	68	29.82	38.2	YES	360	40	440	LN with Epi	370	NO	NO	2.70	9.6	9.0
334	Reena	S	24	1357	B	Primi	1.70	64	22.15	37.1	YES	595	30	220	LN with Epi	160	NO	NO	2.40	10.4	10.2
335	Anitha	C	23	1266	B	Primi	1.57	60	24.34	37.4	YES	655	45	480	LN with Epi	810	YES	YES	3.30	10.2	9.0
336	vidya	S	25	1360	B	Primi	1.52	64	27.70	37.4	YES	645	16	260	LN with Epi	180	NO	NO	2.70	10.4	10.2
337	Deepa	C	27	1369	B	G2P1L1	1.54	55	23.19	38.2	YES	285	15	220	LN with Epi	90	NO	NO	2.40	10.4	9.8
338	Rekaha	S	22	1361	B	Primi	1.53	62	26.49	38.4	YES	600	12	120	LN with Epi	75	NO	NO	2.70	10.2	10.0
339	Rasi devi	C	27	1367	B	Primi	1.53	50	21.36	38.5	YES	685	30	320	LN with Epi	400	NO	NO	2.60	9.8	9.2
340	Shanthi	S	21	1371	B	Primi	1.60	60	23.44	39.1	NO	565	15	210	LN with Epi	210	NO	NO	2.50	10.2	10.0
341	Thilaka	C	23	1384	B	G2P1L1	1.64	62	23.05	38.2	YES	295	18	240	LN with LP	285	NO	NO	2.50	10.4	9.6
342	Chithra	S	25	1301	B	G2P1L1	1.54	59	24.88	38.5	NO	255	15	130	LN with Epi	130	NO	NO	3.00	9.8	9.6
343	Nirmala	C	19	1380	B	Primi	1.50	60	26.67	37.4	YES	600	35	280	LN with Epi	290	NO	NO	3.10	9.8	9.2
344	Meena	S	26	1397	B	Primi	1.55	59	24.56	38.3	YES	655	40	300	LN with Epi	320	NO	NO	3.70	10.0	9.8
345	Nirmala	C	21	1400	B	Primi	1.59	65	25.71	38.1	YES	675	45	380	LN with Epi	800	YES	YES	2.70	10.2	9.0
346	Yuvarani	S	21	1412	B	Primi	1.50	70	31.11	39.1	YES	565	12	140	LN	60	NO	NO	2.60	9.8	9.6
347	Menaka	C	24	757	B	Primi	1.45	48	22.83	37.4	YES	600	24	280	LN with Epi	360	NO	NO	3.80	10.0	9.2
348	Bhavani	S	20	1423	B	Primi	1.55	63	26.22	38.2	YES	595	16	180	LN with Epi	140	NO	NO	3.20	10.0	9.8
349	Amudha	C	27	1408	B	Primi	1.62	62	23.62	38.1	NO	560	24	160	LN with Epi	290	NO	NO	2.60	10.4	9.8
350	Jansi rani	S	27	1391	B	Primi	1.60	66	25.78	39.3	YES	695	43	350	LN with Epi	750	YES	YES	2.50	9.8	9.6
351	Jeya kodi	C	22	1432	B	G2P1L1	1.60	66	25.78	37.5	YES	320	16	280	LN with Epi	350	NO	NO	3.00	10.2	9.4
352	Divya	S	33	1428	B	Primi	1.53	64	27.34	39.4	YES	575	18	220	LN with Epi	100	NO	NO	2.90	10.6	10.2
353	Bhagya laksh	C	21	1434	B	Primi	1.50	56	24.89	37.4	YES	585	25	240	LN with Epi	260	NO	NO	2.60	10.8	10.2
354	Sayeed ali fat	S	32	1439	B	G2P1L1	1.56	67	27.53	37.6	YES	295	20	220	LN with Epi	120	NO	NO	3.10	10.2	10.0
355	Hemavathy	C	19	1433	UB	Primi	1.57	65	26.37	39.2	YES	655	23	260	LN with Epi	150	NO	NO	2.70	10.4	9.8
356	Subhashini	S	24	1441	B	Primi	1.47	58	26.84	38.3	YES	645	20	220	LN with Epi	155	NO	NO	3.30	10.2	9.6
357	Nandhini	C	27	1443	B	Primi	1.63	53	19.95	37.5	YES	710	32	340	LN with Epi	650	YES	YES	3.40	10.4	9.2

358	Shakthi Uma	S	21	1444	B	Primi	1.54	64	26.99	38.5	YES	555	18	180	LN with LP	160	NO	NO	3.20	10.8	10.6
359	Jeilani begum	C	23	1447	B	Primi	1.50	54	24.00	39.1	YES	675	25	300	LN with Epi	240	NO	NO	2.90	10.6	10.0
360	Chinna ponnu	S	26	1451	B	primi	1.55	60	24.97	38.5	YES	245	14	220	LN with Epi	320	NO	NO	2.90	9.8	9.4
361	Yasodha	C	21	1454	B	Primi	1.56	67	27.53	37.5	YES	560	22	180	LN with Epi	230	NO	NO	2.50	10.4	9.8
362	Nirmala	S	23	1445	UB	Primi	1.58	58	23.23	39.2	YES	320	28	260	LN with Epi	440	NO	NO	3.10	10.6	10.2
363	Arul mozhi	C	21	1424	B	Primi	1.60	81	31.64	37.4	YES	655	35	260	LN with Epi	275	NO	NO	2.90	10.2	9.2
364	Gayathri	S	26	1473	B	Primi	1.56	57	23.42	39.3	YES	700	24	320	LN with Epi	360	NO	NO	3.10	9.8	9.6
365	Renuka	C	23	1134	B	G2P1L1	1.46	60	28.15	38.6	YES	320	25	300	LN with Epi	270	NO	NO	3.10	10.4	9.6
366	Namitha	S	22	1259	B	Primi	1.51	60	26.31	39.3	YES	565	21	100	LN with Epi	75	NO	NO	2.70	10.6	10.4
367	Suganya	C	21	1490	B	Primi	1.50	61	27.11	38.2	YES	715	23	380	LN with Epi	270	NO	NO	3.40	9.8	9.0
368	Devi	S	27	1486	B	Primi	1.50	48	21.33	39.1	YES	700	18	240	LN with Epi	180	NO	NO	3.10	10.2	9.8
369	Durga	C	22	1470	B	Primi	1.46	59	27.68	37.4	NO	675	15	260	LN with Epi	280	NO	NO	2.70	10.4	9.8
370	Revathi	S	33	1475	B	G3P2L2	1.50	57	25.33	38.6	YES	600	15	120	LN with Epi	120	NO	NO	2.80	10.2	10.0
371	Sarala	C	23	15169	B	Primi	1.57	49	19.88	37.5	YES	650	32	355	LN with Epi	560	NO	YES	3.50	10.6	10.0
372	Bharathi	S	19	15497	B	Primi	1.58	63	25.24	37.5	YES	645	25	280	LN with Epi	340	NO	NO	3.10	10.2	9.8
373	Sandya	C	27	15533	B	G2P1L1	1.46	47	22.05	38.2	YES	320	32	350	LN with Epi	740	YES	YES	3.10	9.8	8.8
374	Dhavamani	S	22	15534	B	G2P1L1	1.52	55	23.81	38.4	YES	285	12	200	LN with Epi	150	NO	NO	2.40	10.4	10.2
375	Jeya Lakshm	C	19	15532	B	Primi	1.54	59	24.88	38.5	YES	600	18	260	LN with Epi	250	NO	NO	2.00	11.0	10.2
376	Sangeetha	S	26	15545	B	Primi	1.51	64	28.07	37.5	YES	540	14	80	LN with Epi	80	NO	NO	2.10	10.2	10.0
377	Padmini	C	21	15533	B	Primi	1.57	64	25.96	39.2	YES	600	35	280	LN with Epi	140	NO	NO	2.20	10.8	10.2
378	Tamilselvi	S	23	15523	B	Primi	1.51	49	21.49	37.4	YES	550	26	140	LN with LP	110	NO	NO	2.30	10.2	10.0
379	Nazeema	C	27	15438	B	G2P1L1	1.45	49	23.31	39.1	YES	360	35	480	LN with LP	900	YES	YES	3.20	10.8	9.0
380	Saranya	S	21	15422	B	Primi	1.47	54	24.99	38.2	YES	700	42	360	LN with Epi	330	NO	NO	3.00	10.6	10.2
381	Bhakia Laksh	C	22	15544	B	G2P1L1	1.54	41	17.29	39.3	YES	360	36	310	LN with Epi	480	NO	NO	2.40	9.8	9.2
382	Bavani	S	26	15492	B	Primi	1.51	67	29.38	37.5	YES	565	25	220	LN with Epi	210	NO	NO	2.60	10.2	10.0
383	Sangeetha	C	25	15540	B	Primi	1.52	56	24.24	38.4	YES	600	28	290	LN with Epi	330	NO	NO	2.40	10.4	10.0
384	Isai Vani	S	23	15508	B	G2P1L1	1.57	59	23.94	37.4	YES	300	30	340	LN with LP	220	NO	NO	3.20	10.0	9.6
385	Menaga	C	23	15504	B	Primi	1.69	62	21.71	37.2	YES	675	35	310	LN with Epi	275	NO	NO	2.30	10.2	9.2
386	Desammal	S	33	15549	B	G2P1L1	1.54	53	22.35	38.4	YES	670	26	280	LN with Epi	225	NO	NO	2.30	10.6	10.4
387	Sumithra	C	19	15603	B	Primi	1.51	63	27.63	38.1	YES	655	25	240	LN with Epi	245	NO	NO	2.60	11.0	10.4
388	Anitha	S	24	15498	B	G2P1L1	1.52	59	25.54	37.4	NO	300	30	250	LN	205	NO	NO	2.50	10.4	10.2
389	Anitha	C	21	15611	B	Primi	1.52	62	26.84	38.2	NO	555	26	280	LN with Epi	255	NO	NO	2.60	9.8	9.0
390	Shanthi	S	27	15616	B	Primi	1.64	62	23.05	38.1	YES	540	16	130	LN with Epi	240	NO	NO	2.40	10.0	9.8
391	Sudha	C	19	15589	B	Primi	1.59	59	23.34	37.4	YES	560	15	140	LN	90	NO	NO	2.40	10.4	9.8
392	Faritha Bee	S	33	15613	B	G2P1L1	1.53	59	25.20	39.1	YES	285	18	160	LN with Epi	240	NO	NO	3.00	10.0	9.8
393	Hemalatha	C	21	15513	B	Primi	1.53	57	24.35	38.2	YES	655	32	280	LN with Epi	330	NO	NO	2.90	9.6	9.0
394	Mariammal	S	22	15618	B	Primi	1.59	64	25.32	37.2	YES	625	14	140	LN	75	NO	NO	2.60	10.2	9.8
395	Nithya	C	24	15623	UB	Primi	1.54	58	24.46	38.6	YES	695	25	340	LN with Epi	320	NO	NO	3.30	11.0	10.4
396	Sherin	S	28	15590	B	G3P2L2	1.45	47	22.35	38.4	YES	265	12	130	LN with Epi	210	NO	NO	3.70	10.5	10.2
397	Latha	C	21	15600	B	Primi	1.49	69	31.08	37.4	YES	710	42	380	LN	450	NO	NO	2.50	10.2	9.8

398	Parvathy	S	23	15596	B	Primi	1.63	55	20.70	37.3	YES	665	38	340	LN with Epi	700	YES	YES	3.50	10.4	9.0
399	Mohana	C	22	15633	B	Primi	1.54	62	26.14	39.1	YES	675	28	420	LN with Epi	310	NO	NO	3.00	10.8	10.0
400	Naveena	S	28	15662	B	Primi	1.59	65	25.71	37.4	YES	555	24	240	LN with Epi	110	NO	NO	2.90	10.0	9.8

S - Study

C - Control

B - Booked

UB - Un Booked

LN - Labour Natural

L N with Epi - Labour Natural with Episiotomy

LN with LP - Labour Natural with Perineal Laceration

G2P1L1 - Gravida two para one Live one

G3P2L2 - Gravida three Para two Live two

G.Age - Gestational Age

BMI - Body Mass Index